Konica

1216

SERVICE HANDBOOK

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Ver. 1.0

KONICA CORPORATION
TECHNOLOGY SUPPORT CENTER
TOKYO JAPAN

SERVICE HANDBOOK NOTICE

The Konica 1216 Service handbook has just been issued. This model is a derivative of the Konica 2223. Also, this service handbook includes only the differences between the 2223 and 1216, and the items that have been changed. Refer to the 2223 Service handbook for items not included in this new service handbook.

CONTENTS

7. SERVICE

SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this equipment, as well as the risk of damage to the equipment, Konica Corporation, strongly recommends that all servicing be performed only by Konica-trained service technicians.

Changes may have been made to this equipment to improve its performance after this service handbook was printed. Accordingly, Konica Corporation, makes no representations or warranties, either expressed or implied, that the information contained in this service handbook is complete or accurate. It is understood that the user of this service handbook must assume all risks or personal injury and/or damage to the equipment while servicing the equipment for which this service handbook is intended.
Therefore, this Service Handbook must be read carefully before doing service work both in the course of the technical training and even after that, for keeping the correct maintenance and control of the copying machine. Keep the Service Handbook also for the future service. When it is impossible to read the description about safety and warning (due to contamination or tear), the relevant page should be replaced.

DESCRIPTION ITEMS FOR DANGER, WARNING AND CAUTION

In this Service Handbook, each of three expressions, "⚠ DANGER", "⚠ WARNING" and "⚠ CAUTION" is defined as follows together with a symbol mark to be used in a limited meaning.
When servicing, the relevant works (disassembling, assembling, adjustment, repair and maintenance) need to be conducted with utmost care.

⚠ **DANGER:**	**Actions having a high possibility of suffering death or serious wound**
⚠ **WARNING:**	**Actions having a possibility of suffering death or serious wound**
⚠ **CAUTION:**	**Actions having a possibility of suffering a slight wound, medium trouble and material damage**

SAFETY WARNINGS

[1] MODIFICATIONS NOT AUTHORIZED BY Konica

Konica copiers are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Photocopier design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degrading performance and safety. Such modifications are therefore strictly prohibited. The points listed below are not exhaustive, but they illustrate the reasoning behind this policy.

⚠ PROHIBITED ACTIONS :

(1) Using extension cables or a different power cord than specified by Konica.
(2) Using other fuses than specified by Konica. Safety will not be assured, leading to a risk of fire and injury.
(3) Disabling fuses or bridging fuse terminals with wire, metal clips, solder or similar. (This applies also to thermal fuses.)
(4) Removing air filters (except for replacement).
(5) Disabling relay functions (such as wedging paper between relay contacts, etc.).
(6) Disabling safety functions (interlocks, safety circuits, etc.). Safety will not be assured, leading to a risk of fire and injury.
(7) Performing actions to copier not described in the instruction manual or the service handbook.
(8) Using parts other than specified by Konica.

[2] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

Konica copiers are extensively tested before shipping, to ensure that all applicable safety standards are met, in order to protect the customer and customer engineer from the risk of injury. However, in daily use, any electrical equipment will be subject to parts wear and eventual failure. In order to maintain safety and reliability, the customer engineer must perform regular safety checks.

⚠ CAUTION:

(1) Wear clothing that facilitates work and is designed for safety.
(2) Carry out all procedures carefully to prevent injury.
(3) Be sure to disconnect the power cord of the copier and all optional equipment from the AC outlet.
Simply turning off the power switch is not sufficient, because paper feed units or other electrical equipment may be powered also when the power switch is turned off.
(4) Proceed with special care when performing operation checks or adjustment while the unit is powered. When carrying out operation checks or adjustment while external covers are removed, the risk of electrical shock exists when touching parts which carry high voltage or electrical charge. The risk of injury exists when touching moving parts such as gears or chains.

The following list is not exhaustive, but it includes actions which must be carried out at every service call.

⚠ CAUTION:

(1) Check external covers and the frame for sharp edges, burrs, or nicks.
(2) Check external covers and hinges for loosening or damage.
(3) Check wiring for squeezing or damage.
(4) Check power cord for insulation problems (conductor must not be exposed).
(5) Check power cord and cable ties etc. for loosening from frame.

⚠ WARNING:

(1) Verify that the copier is properly grounded. If a problem is detected, establish a proper ground connection.
(2) Connecting the ground lead to an improper point such as listed below results in a risk of explosion and electric shock.
Unsuitable ground points:
- Gas pipe
- Lightning rod
- Telephone line ground
- Plastic water pipe or water pipe or faucet that has not been approved by authorities for grounding use

[3] PRECAUTIONS FOR ON-SITE SERVICE

⚠ **CAUTION:**

(1) Before performing maintenance work, read all relevant documentation (service handbook, technical notices, etc.) and proceed according to the prescribed procedure, using only the prescribed tools. Do not carry out any adjustments not described in the documentation.

(2) If the power cord is damaged, replace it only with the specified power cord. If the power cord insulation has been damaged and there are exposed sections, short-circuits and overheating may occur, leading to a serious fire risk.

(3) Do not route the power cord so that it can be stepped on or pinched. Otherwise overheating may occur, leading to a serious fire risk.

(4) When disconnecting any cables, always grasp the connector and not the cable (especially in the case of AC and high-voltage leads).

(5) Carefully remove all toner remnants from electrical parts, electrodes, etc.

(6) Make sure that wiring cannot come into contact with sharp edges, burrs, or other pointed parts.

(7) Double-check to make sure that all screws, components, wiring, connectors, etc. that were removed for maintenance have been reinstalled in the original location. (Pay special attention to forgotten connectors, pinched cables, forgotten screws, etc.)

(8) When installation and preventive maintenance, verify that the power cord has been securely plugged into the AC outlet. Contact problems may lead to increased resistance, overheating, and the risk of fire.

⚠ **WARNING:**

(1) Danger of explosion if battery is incorrectly replaced, replace only with the same or equivalent recommended by the manufacturer. Discard used batteries according to the manufacture's instructions.

⚠ **VORSICHT:**

(1) Expiosionsgefahr dei unsachegemäßem Austausch der Battetie. Ersatz nur durch denselben oder einen vom. Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

[4] HANDLING OF MATERIALS FOR SERVICING

⚠ **CAUTION: Drum cleaner (alcohol-based) and roller cleaner (acetone- based) are highly flammable and must be handled with care. When using these materials for cleaning of copier parts, observe the following precautions.**

(1) Disconnect the power cord from the AC outlet.

(2) Use only a small amount of cleaner at a time and take care not to spill any liquid. If this happens, immediately wipe it off.

(3) Perform cleaning only in an environment where sufficient ventilation is assured. Breathing large quantities of organic solvents can lead to discomfort.

(4) Do not replace the cover or turn the unit on before any solvent remnants on the cleaned parts have fully evaporated.

⚠ **CAUTION: Toner and developer are not harmful substances, but care must be taken not to breathe excessive amounts or let the substances come into contact with eyes etc. If this happens, immediately rinse with eye wash and plenty of water, and consult a physician.**

[5] MEASURES TO TAKE IN CASE OF AN ACCIDENT

(1) If an accident has occurred, the distributor who has been notified first must immediately take emergency measures to provide relief to affected persons and to prevent further damage.

(2) If a report of a serious accident has been received from a customer, an on-site evaluation must be carried out quickly and Konica Corporation must be notified.

(3) To determine the cause of the accident, conditions and materials must be recorded through direct on-site checks, in accordance with instructions issued by Konica Corporation.

[6] CONCLUSION

Safety of users and customer engineers has topmost priority, ranking even higher than operability. Safety depends on a appropriate maintenance work and is maintained by proper daily service work conducted by customer engineers. When performing service, each copier on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

SAFETY INFORMATION

IMPORTANT INFORMATION

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a "Class 1" laser product under the U.S.
Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

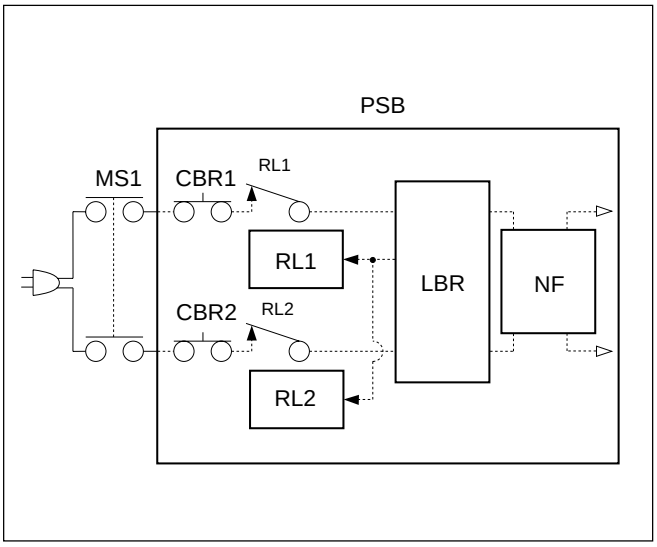
SAFETY CIRCUITS

The electrical circuit of this machine contains the following safety circuits to prevent an accident from occurring in the event of an abnormality.

[1] Overall safety circuit protector
[2] L1 (exposure lamp) overheating protection circuit
[3] L2 (fixing heater lamp) overheating protection circuit

The following explanations are provided to prevent service engineers from unintentionally disabling the safety circuits.

[1] Overall Safety Circuit Protector



1. Protection function provided by CBR (circuit breaker)

This function breaks the AC line instantaneously in the event that there is excessive current flow due to a short between the AC lines, for example.

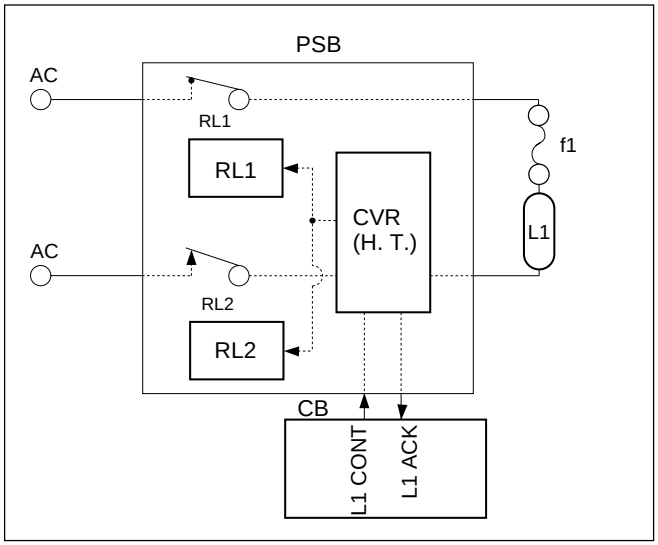
⚠ **Caution: The function of CBR must not be deactivated under any circumstances.**

2. Protection function provided by LBR (current leakage detecting circuit)

This function turns RL1 and RL2 (main relays) OFF and breaks the AC line instantaneously in the event that leakage current flows due to a ground short in one side of the AC line, for example.

⚠ **Caution: The function of LBR must not be deactivated under any circumstances.**

[2] L1 (Exposure Lamp) Overheating Protection Circuit



1. Protection function provided by software

When the L1 CONT signal output from the protection function by software on the CB (control board) becomes [L], L1 lights. Simultaneously, the L1 ACK signal, which indicates that L1 is lit, is output from the CVR on the PSB (power supply board) to the CB.

The CB monitors both the L1 CONT and L1 ACK signals. If they differ from each other, RL1 and RL2 (main relays) will be turned OFF and power to L1 will be cut off.

⚠ **Caution: The function of RL1 and RL2 must not be deactivated under any circumstances.**

2. Protection function using HT (Hardware Timer circuit)

If L1 remains lit for more than approximately 15±5 seconds because of some abnormality, the hardware timer on the CVR in the PSB will operate, forcibly cutting off RL1 and RL2.

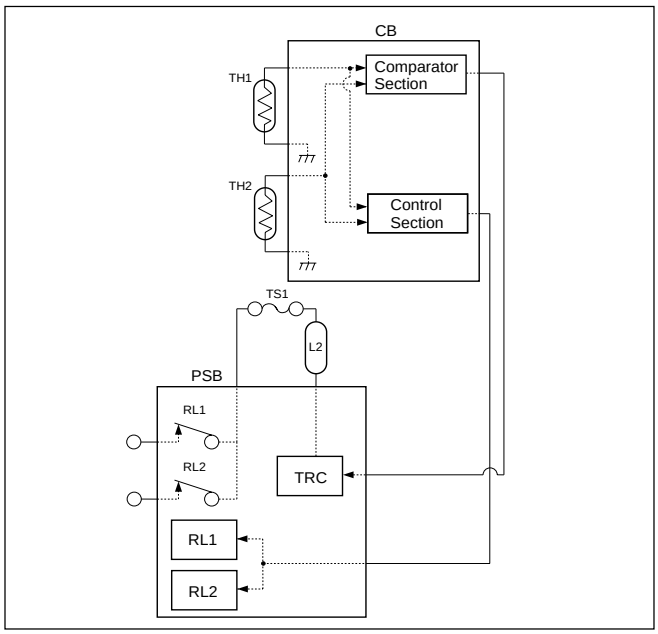
⚠ **Caution: The function of RL1 and RL2 must not be deactivated under any circumstances.**

3. Protection function using f1 (optics temperature fuse)

If the temperature in the vicinity of f1 rises above 169°C, f1 will blow, cutting off the flow of current to L1.

⚠ **Caution: Do not use a piece of wire in place of f1 under any circumstances.**

[3] L2 (Fixing Heater Lamp) Overheating Protection Circuit



1. Protection function provided by software

This function turns OFF L2 (fixing heater lamp), RL1, and RL2 (main relays) in the event that the output voltage from TH1 (fixing temperature sensor 1), read by the CB (control board), is abnormal.

⚠ **Caution: Periodically check the surfaces of TH1 and TH2 that contact the roller, and replace them if they are abnormal.**
The function of RL1 and RL2 must not be deactivated under any circumstances.

2. Protection function provided by hardware

This function uses a comparator circuit which compares the output voltage of TH1 and TH2(fixing temperature sensor 2) with the abnormal judgment reference value.
It disconnects L2, RL1, and RL2 from the circuit in the event that the output voltage of TH1 or TH2 exceed the reference value.

⚠ **Caution: Periodically check the surfaces of TH1 and TH2 that contact the roller, and replace them if they are abnormal.**
The function of RL1 and RL2 must not be deactivated under any circumstances.

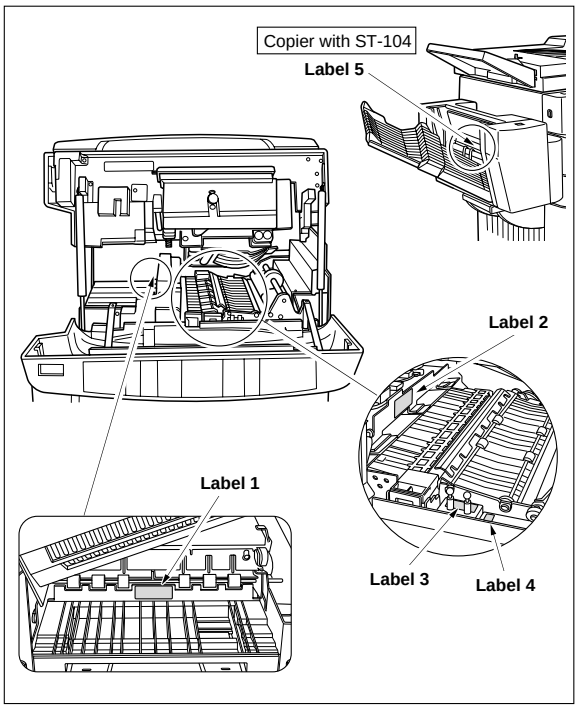
3. Protection function using TS1 (Thermostat)

If the surface temperature of the upper fixing roller exceeds a specified value, TS1 will blow, directly cutting off the flow of current to L2.

⚠ **Caution: Do not use a piece of wire in place of TS1 under any circumstances.**

INDICATION OF WARNING OF THE MACHINE

In the machine, each unit shown below is provided with a label of caution or warning concerning safety. In the case of maintenance, repair and adjustment of the machine, take good care in doing work so that a burn or an electric shock may be avoided.



Label 1

CAUTION ATTENTION VORSICHT
HIGH TEMPERATURE TEMPERATURE ELEVEE HEISS
TAKE CARE WHEN REMOVING JAM
SOYEZ PRUDENT EN RETIRANT UNE FEUILLE COINCEE
Bitte Vorsicht bei Entfernen von Papierstau

Label 2

CAUTION ATTENTION VORSICHT
高 温 注 意
HIGH TEMPERATURE TEMPERATURE ELEVEE HEISS
TAKE CARE WHEN REMOVING JAM
SOYEZ PRUDENT EN RETIRANT UNE FEUILLE COINCEE
Bitte Vorsicht bei Entfernen von Papierstau

Label 3

高圧注意
HIGH VOLTAGE CAUTION
VORSICHT HOCHSPANNUNG
CAUTION HAUTE TENTION

Label 4

Label 5

To avoid injury, keep figners away from the staple unit.
Pour éviter toute blessure, ne pas mettre les doigts dans l'agrafeuse.

⚠ CAUTION

**This internal area is very hot.
To avoid getting burned
DO NOT TOUCH.**

⚠ CAUTION

**This area generates high voltage.
To avoid an electrical shock
DO NOT TOUCH.**

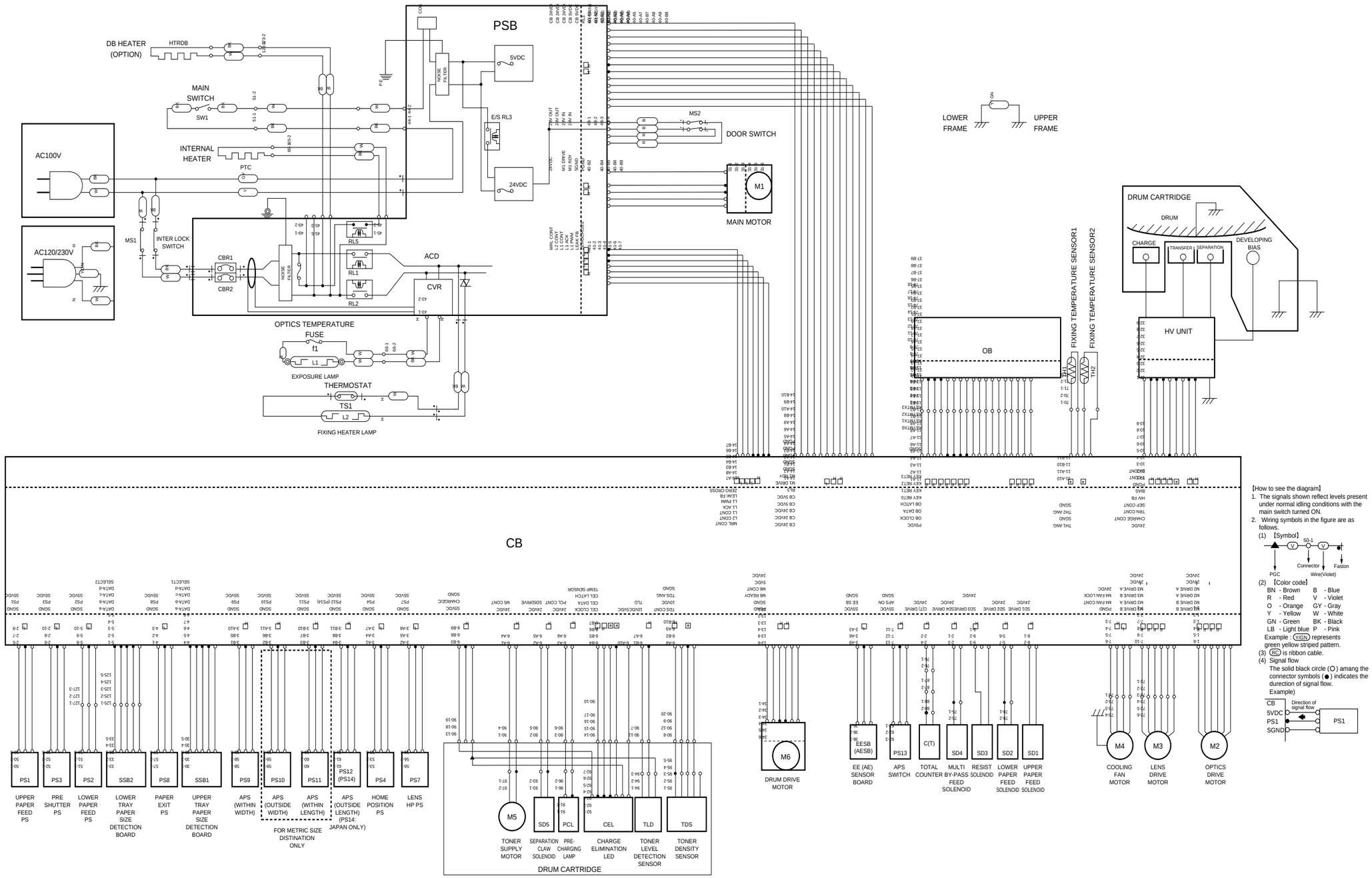
⚠ CAUTION

DO NOT INSERT your finger into staple drive poartion, otherwise you may cause injury.

⚠CAUTION

**You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.
Do not remove caution labels. If any caution label or caution indicator is soiled, clean the label. If you cannot make it legible or if the caution label is removed, please contact your Service Centre.**

1216 OVERALL WIRING DIAGRAM



【How to see the diagram】

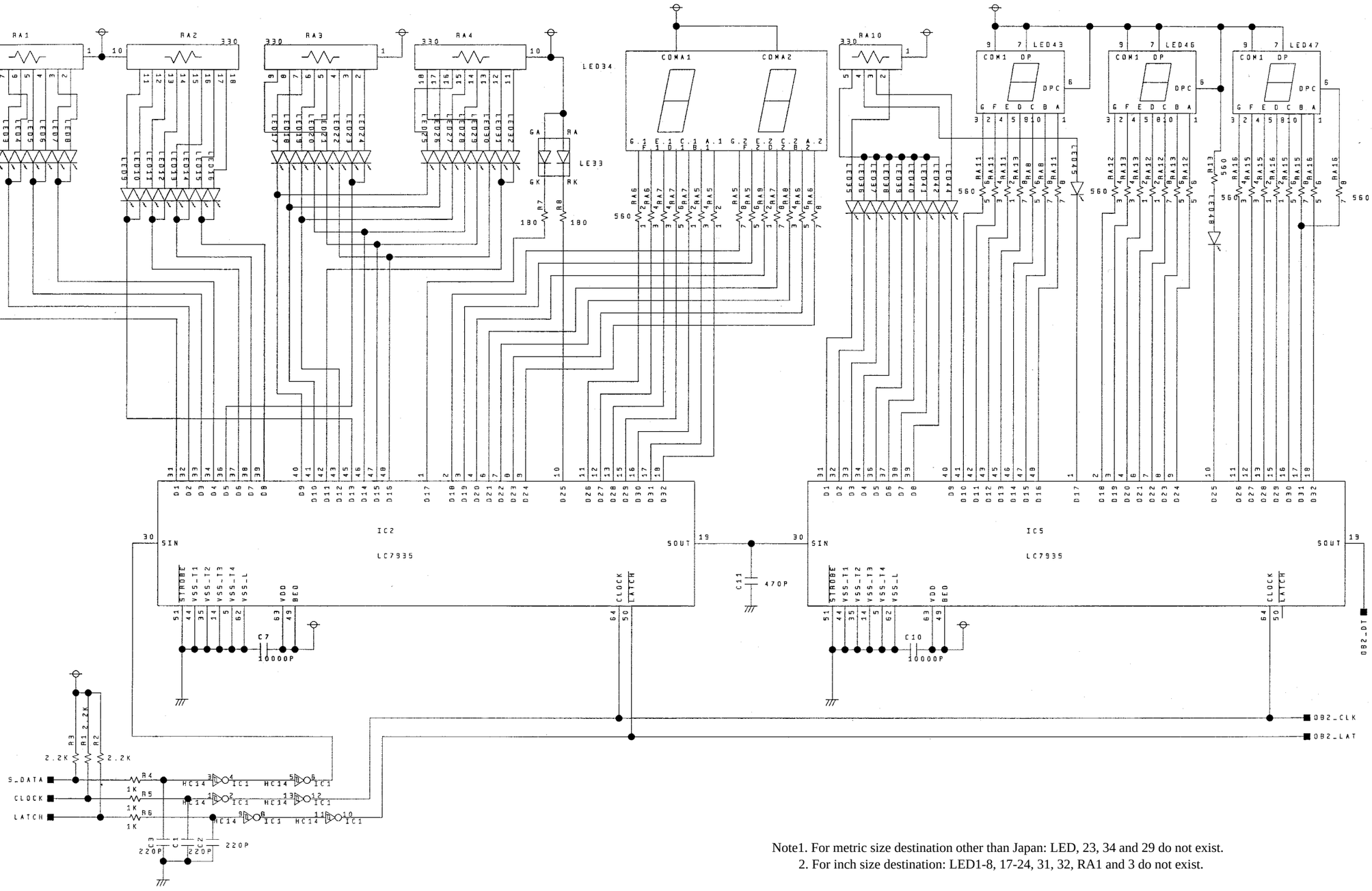
1. The signals shown reflect levels present under normal idling conditions with the main switch turned ON.
2. Wiring symbols in the figure are as follows.
   (1) 【Symbol】

   (2) 【Color code】

BN	- Brown	B	- Blue
R	- Red	V	- Violet
O	- Orange	GY	- Gray
Y	- Yellow	W	- White
GN	- Green	BK	- Black
LB	- Light blue	P	- Pink

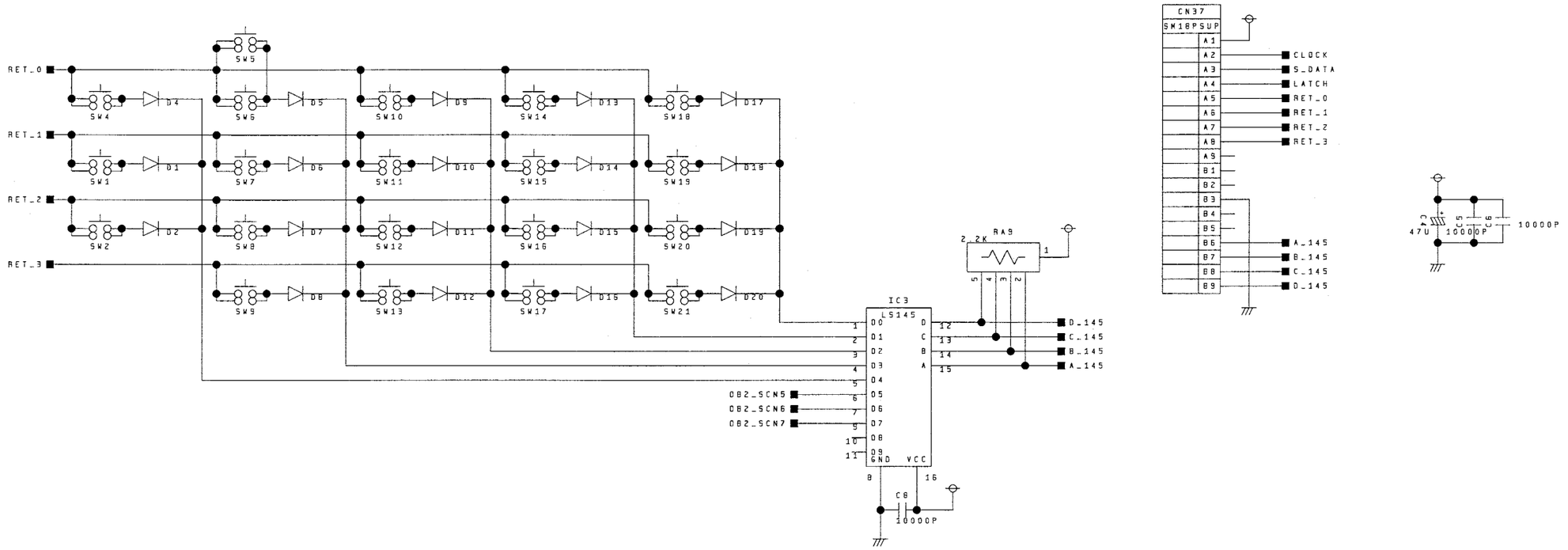
   Example : (YiGN) represents green yellow striped pattern.
   (3) (RC) is ribbon cable.
   (4) Signal flow
   The solid black circle (○) amang the connector symbols (●) indicates the direction of signal flow.
   Example)

OPERATION BOARD CIRCUIT DIAGRAM(1/3)

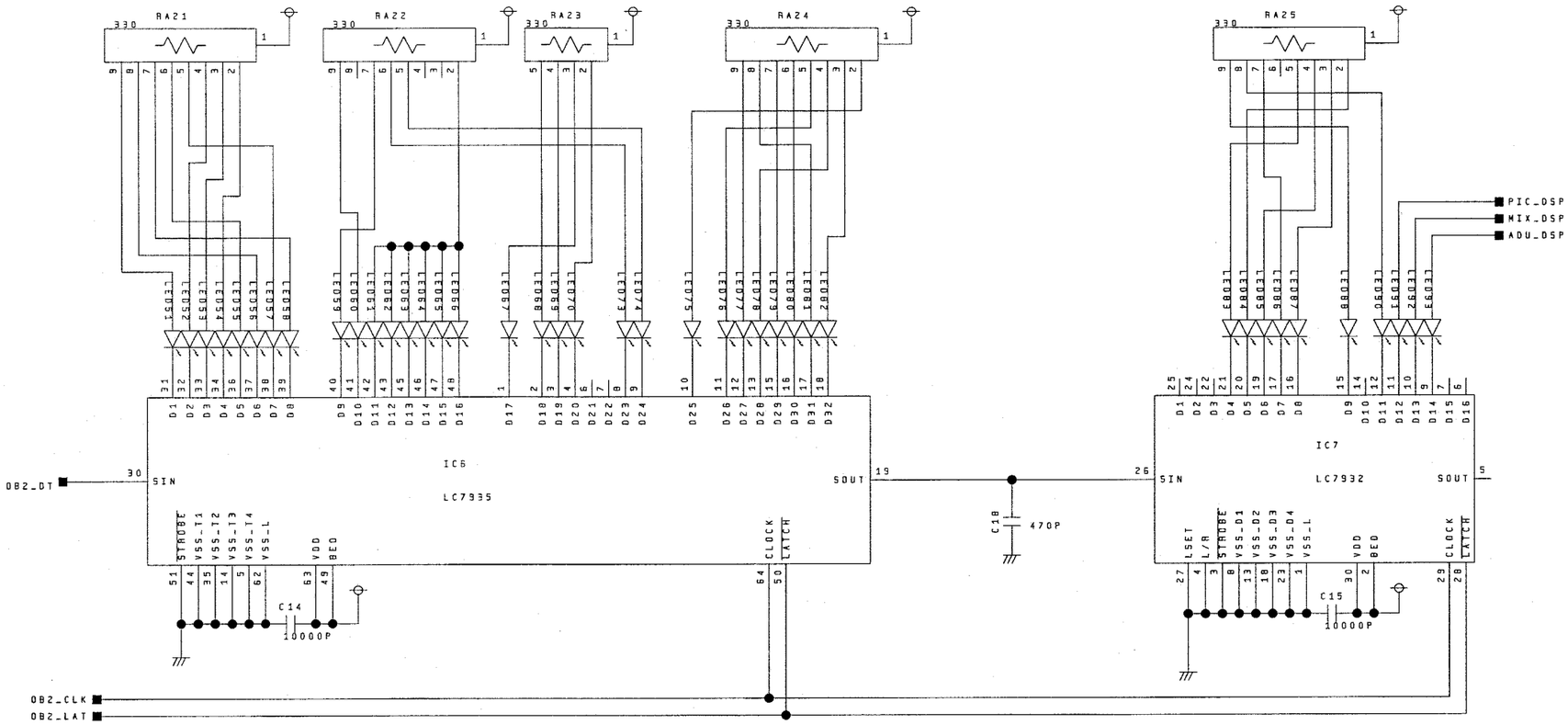


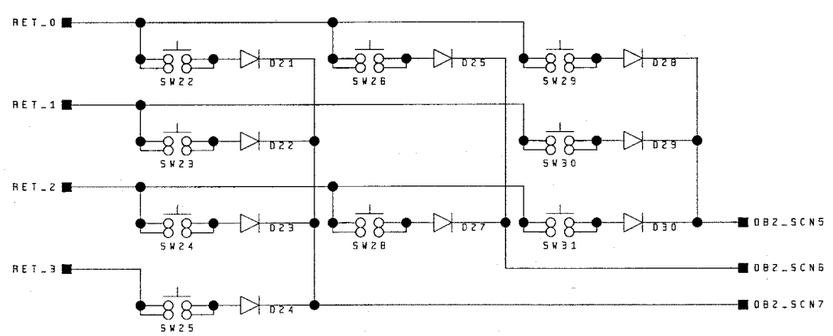
Note1. For metric size destination other than Japan: LED, 23, 34 and 29 do not exist.
2. For inch size destination: LED1-8, 17-24, 31, 32, RA1 and 3 do not exist.

OPERATION BOARD CIRCUIT DIAGRAM(2/3)



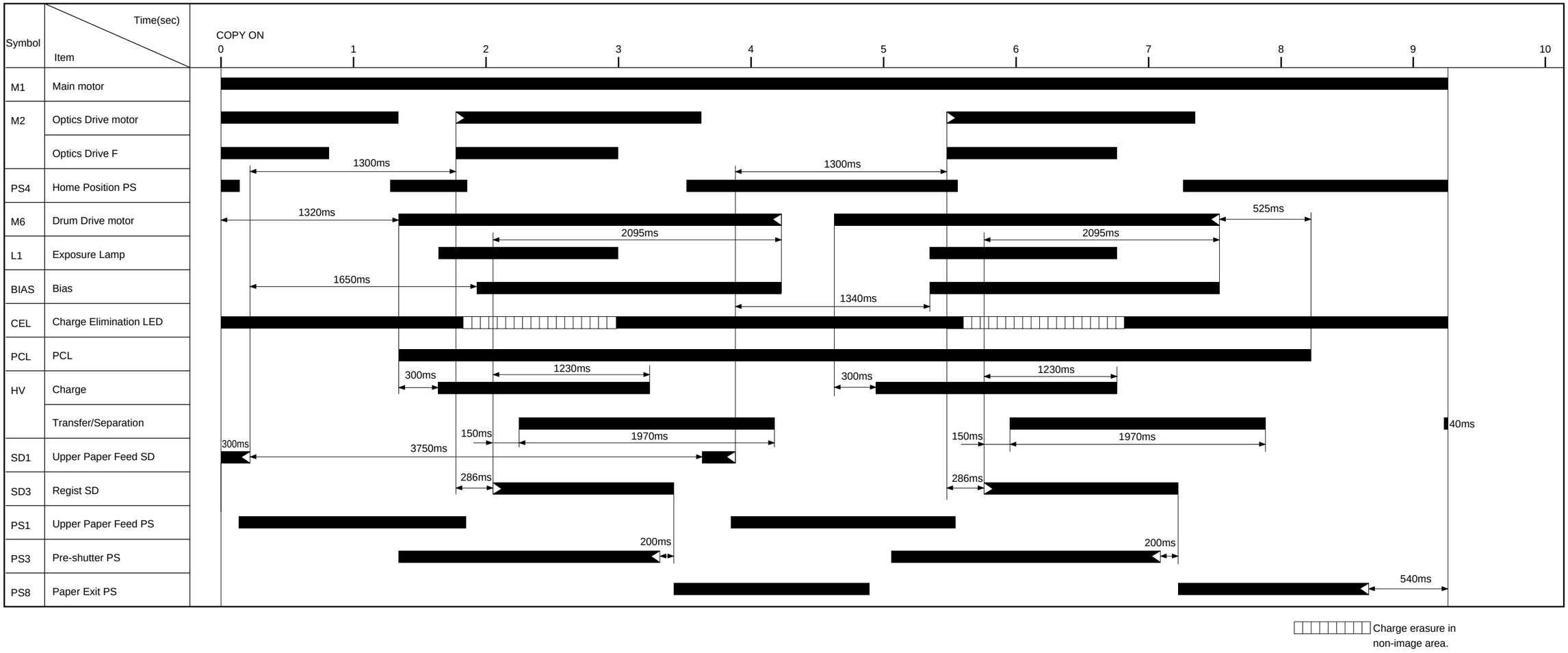
OPERATION BOARD CIRCUIT DIAGRAM(3/3)





Note1. For metric size destination other than Japan: LED, 23, 34 and 29 do not exist.
2. For inch size destination: LED1-8, 17-24, 31, 32, RA1 and 3 do not exist.

1216 TIME CHART (A4, Life size, 2 sheets)



Charge erasure in non-image area.

HOW TO USE THIS SECTION

This section details adjusting items and procedures. Use this section for making adjustments and as a checklist before implementing corrective measures in the field.

1. Does the power supply meet the requirements?
2. Is the power supply properly grounded?
3. Is the machine sharing its power source with another high current consumption machine that draws large currents intermittently? (for example, an elevator, air conditioner, or other source of electrical consumption)
4. Is the installation environment suitable?
   a. Keep out of High humidity, direct sunlight, bad ventilation, etc..
   b. Make sure that the floor where the machine is installed is level.
5. Does the cause of a defective image lie in the original itself?
6. Is the density adjusting control at the proper position?
7. Are the original glass and original cover clean?
8. Is the correct paper being used for the copy?
9. Are the copying materials and parts replaced when they reach the end of their usable life? (developer, drum, cleaning blade, etc.)
10. Is there toner in the machine?

The following items should also be observed when repairing the machine.

1. Both AC power lines are disconnected when the main switch of this machine is turned off. However, the optional PTC heater remains ON and keeps high temperature since the interlock switch is turned ON. So, always unplug the machine before beginning work. If absolutely necessary to work with the power on, exercise care not to get caught in gears or scanning operation of exposure unit.
2. Take special care when handling the fixing unit since it operates at extremely high temperatures.
3. The developing unit is surrounded by a strong magnetic field. Keep watches and metering equipment away from it.
4. Avoid scarring the drum with tools or similar objects.
5. Do not touch IC pins with your bare hands.

ADJUSTMENTS WHEN REPLACING PARTS

Adjustments (including checks) and settings are required not only when a defective copy image occurs, but also after replacing or reinstalling certain parts.

[How to Use the Table]
The following items in the table are used.

1. Mode
   Indicates the adjustment mode.
   ["47"] : 47 mode
   ["25"] : 25 mode
   ["36"] : 36 mode
   [—] : Normal mode

2. Code
   Indicates the applicable code.

3. VR
   Caution: All VRs on the boards are for factory adjustment. Do not adjust them.
   - [—] None
   - Indicates the VR number on the CB (Control Board).
   - Indicates the board name when VR is mounted on a board other than the CB.

4. Page
   Indicates the page to refer to in the adjustment or diagnostics sections.

5. Conditions
   New : Indicates adjustment (including check) is required when replacing a new part.
   Re-set : Indicates adjustment (including check) is required when a part has been reinstalled.

6. Circled numbers used in the table
   1 , 2 ..... : Indicates there is a priority sequence for adjustments (including check) and settings.
   ◯ : Indicates adjustments (including checks) and settings which can be carried out independently.

		No.	1	2	3	4	5	6	7	8	9	10	11	12	13
		Adjustment and Setting Items	Adjusting L Detection (Toner Density)	AE Automatic Adjustment	Light Intensity Adjustment	Leading Edge Timing Adjustment	Vertical Magnification Adjustment	Horizontal Magnification Adjustment	Lead Edge Erasure Width Adjustment	Light Distribution Adjustment	Distortion Adjustment	Focus Adjustment	Trail Edge Erasune Width Adjustment	HP to Original Lead Edge Distance Adjustment *2	Checking and Resetting the Drum Counter
		Mode	"47"	"47"	"36"	"36"	"36"	"36"	"36"	–	–	–	"36"	"36"	"47"
		Code	51	98	90	91	93	95	92	–	–	–	96	97	91
		VR	–	–	–	–	–	–	–	–	–	–			
No.	Part name	Page *3 / Conditions	6-24	6-24	6-29	6-29	6-30	6-30	6-31	5-5	5-6	5-7	6-32	6-32	5-4
1	Drum	New		④	③				⑤	②			⑥		①
2	CB (Control Board) *1	New													
3	Memory IC	New	①	⑨	④	⑥	②	③	⑦				⑧	⑤	
4	L1 (Exposure lamp)	New		③	②				④	①			⑤		
5	Optics wire	New, Re-set		⑧	⑦	⑤	③		⑨	⑥	①	②	⓪	④	
6	Exposure unit	New, Re-set		⑤	④			①	⑥	③		②	⑦		
7	AE sensor	New		○											
8	Developing	New	○		○					○					
9	DCPS	New		②	①										
10	M2 (Optics drive)	New, Re-set				⑤	③		⑥		①	②	⑦	④	
11	Other parts for optics drive	New, Re-set				⑤	③		⑥		①	②	⑦	④	

- "New" means replace with a new unit. "Re-set" means re-installation.
- If there is a priority sequence to adjustment, it is indicated as a number inside the circle.
- When replacing the memory IC, carry out the necessary settings in the 25 mode. In addition, replace developer and adjust L detection. [Copy counter (developer fatigue correction, drum fatigue correction) data are cleared by L detection adjustment.]

*1: Excluding the memory IC

*2: Before performing "HP to Original Lead Edge Distance Adjustment", set the lead edge erasure width adjustment data (at 100% and 50%) to zero.

*3: Refer to the specified page of 2223 SHB about the adjustment and the setting of each item. (except for the drum count reset.)

ADJUSTMENTS WITH THE P BUTTON

Adjustments that can be made with the P button include setting and checking various parameters, and are therefore referred to as "P functions". P functions may be broadly divided into those available to the end-user and those exclusively for the service technician.

In this section, the functions available to service technician are explained.

[1] P Function List

No.	Function
1	Checking the total/copy count
0, 2, 4, 6	Setting the developing bias shift
3	Checking the developing bias shift
5	Checking the PM count
7	Checking the drum count
8	Checking the ROM version
9	Service management mode

[2] P Function Operating Procedures

1. Turn the main switch ON.
2. While holding the P button, press the desired number of the copy quantity setting buttons, referring to the above P function list.
3. Check data that will be displayed in the copy quantity indicator.
4. Turn the main switch OFF.

[3] Checking the Total/Copy Count

Step	Operation procedure	Operation
1	While pressing the P button, press the "1" key.	P+1
2	Check the copy or total count value (*1) in the copy quantity indicator. The copy or total count will be displayed two digits at a time in sequence and totaled six digits.	

*1: When the 25 mode, address 11 is set to "0", the total count will be displayed.
When the 25 mode, address 11 is set to "1", the copy count will be displayed.

[4] Setting and Checking the Developing Bias Shift

1. Setting procedures

Step	Operation procedure	Operation
1	While pressing the P button, press applicable copy quantity setting button for more than 2 seconds (*2).	P+(*2)
2	Check the bas shift level (L0 to L3) in the copy quantity indicator.	

*2: Developing bias shift

Copy quantity setting button	Developing bias indication
0	L0 : –150V
2	L1 : –180V
4	L2 : –200V
6	L3 : –130V

2. Checking procedures

Step	Operation procedure	Operation
1	While pressing the P button, press "3" key.	P + 3
2	Check the level of the developing bias shift in the copy quantity indicator (*3).	

*3: Developing bias voltage for each level

Indication	Developing bias indication
L0	–150V
L1	–180V
L2	–200V
L3	–130V

[5] Checking and Resetting the PM Count

1. Checking procedures

Step	Operation procedure	Operation
1	While pressing the P button, press the "5" key.	P + 5
2	Check the PM count in the copy quantity indicator. The PM count value is the two-digit number × 1000.	

2. Resetting procedures

Step	Operation procedure	Operation
1	Enter the 47 mode	
2	Enter code "90"	90
3	Press the copy button	Copy button

[6] Checking and Resetting the Drum Count

1. Checking procedures

Step	Operation procedure	Operation
1	While pressing the P button, press the "7" key.	P + 7
2	Check the drum count value in the copy quantity indicator. The drum count will be displayed two digits at a time in sequence and totaled six digits.	

2. Resetting procedures

Step	Operation procedure	Operation
1	Enter the 47 mode	
2	Enter code "91"	91
3	Press the copy button	Copy button

[7] Checking the ROM Version

Step	Operation procedure	Operation
1	While pressing the P button, press the "8" key.	P + 8
2	Check the ROM version in the copy quantity indicator.	

[8] Checking the Count Data in the Service Management Mode

In the Service Management Mode, you can check the following count data.

(1) ADF paper passage count
(2) JAM occurrence count by each point
(3) SC occurrence count

1. The service management mode, setting and terminating procedures.

Step	Operation procedure	Operation
1	Enter the 25 mode.	
2	Set the address 25 to "2", and the address 52 to "8".	
3	After turning the main Switch OFF, turn it ON again.	
4	While pressing the P button, press the "9" key of the copy quantity setting button.	P + 9
5	"Cod" will be displayed in the magnification display and "PS" will be displayed in the copy quantity indicator.	
6	Using the copy quantity setting button, enter the numbers that are set in the 25 mode address 78 and 79.	Copy q'ty setting button
7	Entering correct values displays "oPE" in the magnification display, and "--" in the copy quantity indicator and the machine goes into the service management mode.	
8	In case of the service management mode termination, press the stop / clear button while pressing the P button.	P + CLR
9	The machine returns to the regular mode from the service management mode.	
10	Turn the main switch OFF.	
11	Enter the 25 mode.	
12	Set the address 25 to "0", and the address 52 to "0".	
13	Turn the main switch OFF.	

2. Checking the ADF paper passage count

Step	Operation procedure	Operation
1	Enter the service management mode.	
2	If 4 of the copy quantity setting button is pressed, "A. dF" will be displayed in the magnification display.	4
3	If the copy button is pressed, the machine goes into the ADF count read out mode and lower 3 digits of the 6-digit count value will be displayed in the magnification display.	Copy button
4	Press the magnification mode button.	Mag. mode button
5	The magnification mode LED (RE or 1:1) will be lit, and higher 3 digits of the count value will be displayed in the magnification display.	
6	In case of the ADF count read out mode termination, press the magnification mode button to indicate lower 3 digits of the count value.	Mag. mode button
8	Press the stop / clear button.	CLR
9	"oPE" will be displayed in the magnification display and the machine returns to the service management mode.	

3. Checking the JAM occurrence count by each point

Step	Operation procedure	Operation
1	Enter the service management mode.	
2	If 5 of the copy quantity setting button is pressed, "-J -" will be displayed in the magnification display.	5
3	If the copy button is pressed, the machine goes into the JAM count readout mode.	Copy button
4	Press the RE button to display the code No. (*4) of each JAM occurrence count which you want to check in the copy quantity indicator.	RE button
5	Lower 3 digits of the 6-digit count value will be displayed in the magnification display.	
6	Press the magnification mode button.	Mag. mode button
7	The magnification mode LED (RE or 1:1) will be lit, and higher 3 digits of the count value will be displayed in the magnification display.	
8	Press the magnification mode button to indicate lower 3 digits of the count value (the magnification mode LED will go out.)	Mag. mode button
9	In case of checking another JAM count, repeat steps 4 to 8.	
10	In case of the JAM count read out mode termination, press the stop / clear button.	CLR
11	"oPE" will be displayed in the magnification display and the machine returns to the service management mode .	

*4 Count code for the JAM count

Code No.	JAM Code	Code No.	JAM Code
3	J12	15	J63
4	J13	16	J72
5	J14	17	J75
6	J15	18	J92
11	J31	19	J93
12	J32	20	J94
13	J61	39	J95
14	J62	57	J65

4. Checking the SC occurrence count

Step	Operation procedure	Operation
1	Enter the service management mode.	
2	If 8 of the copy quantity setting button is pressed, "- SC" will be displayed in the magnification display.	8
3	If the copy button is pressed, the machine goes into the SC count read out mode.	Copy button
4	Press the RE button to display the code No. (*5) of the SC count which you want to check in the copy quantity indicator.	RE button
5	Lower 3 digits of the 6-digit count value will be displayed in the magnification display.	
6	Press the magnification mode button.	Mag. mode button
7	The magnification mode LED (RE or 1:1) will be lit, and higher 3 digits of the count value will be displayed in the magnification indicator.	
8	Press the magnification mode button to indicate lower 3 digits of the count value (the magnification mode LED will go out.)	Mag. mode button
9	In case of checking another SC count, repeat steps 4 to 8.	
10	In case of the SC count read out mode termination, press the stop / clear button.	CLR
11	"oPE" will be displayed in the magnification display, then the machine returns to the service management mode.	

*5 Count code for the SC count

Code No.	SC Code	Code No.	SC Code
1	F18-1	25	F67
5	F28-1	26	F70
7	F34-1	27	F77
9	F35-1	29	F98
11	F36-1	30	F09
13	F41-1	31	F26
17	F42-1	32	F54
19	F43	33	F88
20	F45-1	34	F76
22	F52	80	F53
23	F55	81	F23
24	F60		

25 MODE

[1] Setting procedures

A special operating mode called the 25 Mode has been provided exclusively for specifying various settings. This mode allows data in memory IC to be rewritten.

(1) Turn the main switch OFF.
(2) While pressing the numerical keys 2 and 5 of the copy quantity setting button, turn the main switch ON. This will enable the 25 Mode. The 25 Mode is used exclusively to rewrite in memory and, therefore, does not support normal copy operations.
(3) Using the copy quantity setting buttons, specify the address number of the data to be changed.
  (a) Press the P button.
  The address number will blink in the magnification indicator.
  (b) Enter the desired address number using the copy quantity setting buttons.
  The newly-entered address number will blink in the magnification indicator.
  (c) Press the P button.
  The blinking address number will be lit.
(4) Rewrite the data currently stored in that address.
  (a) Enter the new data using the copy quantity setting buttons.
  The old data appears in the tens digit position of the copy quantity indicator and newly-entered data in the ones digit position.
  (b) Press the copy button.
  This will rewrite the data and change the copy quantity display to show the new data in the tens digit position.
(5) Turn the main switch OFF to exit the 25 Mode.

[2] 25 Mode Address Map

Address	Item	Setting range	Initial value	Change details	Remarks
00					
01					
02					
03	Auto Low power mode setting time selection	0, 1	0	0: setting time 1 : setting time+120min	*1
04					
05					
06					
07	Auto shut off mode setting time selection	0, 1	0	0: setting time 1 : setting time+120min	*2
08					
09					
10	Auto start original selection	0-2	0		*3
11	Counter selection (P+1)	0, 1	0	0: Total count 1: Copy (developing) count	
12					
13	Copy quantity setting limit selection	0-9	0	0: Max. 1: 1 2: 3 3: 5 4: 9 5: 10 6: 20 7: 30 8: 50 9: 99	
14					
15	A size mode selection	0, 1	0	0: Normal 1: A size priority	
16	Preferential paper size selection	0-8:Europe 0-5:USA	1:Europe 2:USA		*4
17	OHP interleave selection	0, 1	1	0: Copy sheet 1: Blank sheet	
18					
19	Auto Low power mode time setting	1-5	4	1: 2 min. 2: 5 min. 3: 10 min. 4: 15 min. 5: 30 min.	
20					
21	Auto start release time	0-3	1	0: 10 sec. 1: 20 sec. 2: 30 sec. 3: Not released	
22					
23					
24					
25	Copy control protection area 1	0, 2	0	0: Protected 2: Not protected	
26	ADF frame erase selection	0, 5	0:Europe 5:USA	0: None 5: 5mm frame	
27	10^4 PM cycle specification	0-9	3		
28	10^3		0		
29					
30					
31			0		
32	10^5 PM count	0-9	0		
33	10^4		2		
34	10^3		9		
35	10^2		9		
36	10^1		9		
37	10^0		9		

Address	Item		Setting range	Initial value	Change details	Remarks
38						
39	10^5	Drum count	0-9	0		
40	10^4			0		
41	10^3			0		
42	10^2			0		
43	10^1			0		
44	10^0			0		
45	Minimum original size detection selection		0,1:Europe 0-2:USA	0		*5
46	Sorter initial mode setting		0-3	0	0 : Non-sorter mode priority 1 : Sort priority 2 : Group priority 3 : Sort/Staple priority	
47	Clearing fixing failures		0-9	0	0 : Cancel 1-9 : Fault	
48	Auto reset setting		0-1	1	0 : No auto reset 1 : Auto reset (Europe 90 sec., USA 120 sec.)	
49	Clearing current leakage/ main relay failure		0-2	0	0 : Cancel 1 : Current leakage fault 2 : Main relay fault	
50	Double count specification for A3 copies		0, 1	0	0: 1 count 1: 2 counts	
51	Initial tray selection (when canceling APS)		0-5	0	0: Tray1 1: Tray2 2: Tray3 3: Tray4 4: Tray5 (Japan only) 5: Bypass tray	
52	Copy control protection area 2		0, 8	0	0: Protected 8: Not protected	
53	Auto tray switch		0-1	0	0 : Non select 1 : Select	
54						
55						
56	Auto button function selection		0-9	0		*6
57	Key counter operation specification		0, 5	0	0 : Stop after the paper for the ongoing copy operation has exited. 5 : Stop immediately.	
58	Initial mode setting		0-7	0		*7
59	AMS mode priority selection		0-3	3		*8
60	User's bias shift selection		0-3	0	0 : L0 1 : L1 2 : L2 3 : L3	
61						
62	Auto shut off timer setting		0-3	0	0 : 30 min. 1 : 60 min. 2 : 90min. 3 : 120 min.	
63						

Address	Item		Setting range	Initial value	Change details	Remarks
64	10^5	Total count	0-9	0		
65	10^4			0		
66	10^3			0		
67	10^2			0		
68	10^1			0		
69	10^0			0		
70	Priority of original/transfer sheet selection		0-3	1		*9
71	Whole image selection for bypass and universal trays		0-3	0		*10
72	10^0	Master key code	0-9	0		
73	10^1			0		
74	10^2			0		
75	10^3			0		
76	10^4			0		
77	10^5			0		
78	10^6			0		
79	10^7			0		
80						
81	Internal heater setting		0, 1	1	0 : Internal heater not installed 1 : Internal heater install	
82	LCT paper size selection		2-5:Europe 2,3:USA	4:Europe 3:USA		*11
83	Switching the size selection/ casstte selection		0, 1	0	0 : Size selection 1 : Cassette selection	
84						
85	10^5	Copy (developing) count	0-9	0		
86	10^4			0		
87	10^3			0		
88	10^2			0		
89	10^1			0		
90	10^0			0		
91						
92	Immediate stop mode setting (Caution code P25)		0, 1	0	0 : Enable 1 : Disable	
93	KRDS host password setting					
94	KRDS time/date setting					
95	KRDS telephone number setting					
96	KRDS serial number setting					
97						
98	KRDS memory switch setting					
99						

*1 Auto Low Power Mode Setting Time Selection

Select if you add 120min to the auto low power mode setting time by the 25mode P19.

*2 Auto Shut Off Mode Setting Time Selection

Select if you add 120min to the auto shut off mode setting time by the 25mode P62.

*3 Auto Start Original Selection

Data	Setting condition
0	Not available for B5R or smaller originals
1	Not available for B5R or smaller originals only when APS
2	Available for all originals

*4 Preferential Paper Size Selection

Data	Setting condition	
	Europe	USA
0	A3	11 × 17
1	A4	8.5 × 14
2	A4R	8.5 × 11
3	A5	8.5 × 11R
4	Special	5.5 × 8.5
5	F4	Special
6	B5R	(8.5 × 11)
7	B5	(8.5 × 11)
8	B4	(8.5 × 11)

*5 Minimum Original Size Detection Selection

Data	Setting condition	
	Europe	USA
0	B5R	8.5 × 11R
1	A5R	5.5 × 8.5
2	(B5R)	8.5 × 11

*6 Auto Button Function Selection

* "Placing original in ADF" is original setting from platen mode.
* "APS selection when opening ADF" is on condition that APS is not selected when opening ADF.

Data	Auto button function	Operation when placing original in ADF	APS selection when opening ADF
0,8	Full auto	ADF selection	Stillness APS selection
1,9	Individual selection [25-P58P]	ADF selection	Stillness APS selection
2	Full auto	Full auto	Stillness APS selection
3	Individual selection [25-P58P]	Individual selection [25-P58P]	Stillness APS selection
4	Full auto	ADF selection	Stillness APS non-selection
5	Individual selection [25-P58P]	ADF selection	Stillness APS non-selection
6	Full auto	Full auto	Stillness APS non-selection
7	Individual selection [25-P58P]	Individual selection [25-P58P]	Stillness APS non-selection

*7 Initial Mode Setting

* For data "7", the manual mode is set to first priority.

Data	ADF	APS	AE
0	Priority	Priority	Priority
1	Non-priority	Priority	Priority
2	Priority	Non-Priority	Priority
3	Non-priority	Non-Priority	Priority
4	Priority	Priority	Non-Priority
5	Non-priority	Priority	Non-Priority
6	Priority	Non-Priority	Non-Priority
7	Non-priority	Non-Priority	Non-Priority

*8 AMS Mode Priority Selection

Data	Original	Priority
0	Platen/ADF	Life-size
1	Platen	AMS
	ADF	Life-size
2	Platen	Life-size
	ADF	AMS
3	Platen/ADF	AMS

*9 Priority of Original / Transfer Sheet Selection

* Original mode makes image under priority of original. Transfer sheet mode makes image under priority of paper size selected.

Setting	Mode	Erasure control conditions
0	All modes	Original mode
1	APS/AMS mode	Original mode
	Other modes	Transfer sheet mode
2	All modes	Transfer sheet mode
3	ADF/ platen APS/AMS mode	Original mode
	Other modes	Transfer sheet mode

*10 Whole Image Selection for Bypass and Universal Trays

Data	Setting condition
0	Not available
1	Available for bypass tray only
2	Available for universal tray only
3	Available for both bypass and universal trays

47 MODE

[1] Setting the 47 Mode

This model is equipped with I/O check function as self-diagnostics that can be activated in 47 mode.
It is possible to check the status of each sensor and to confirm and adjust each load.

1. Setting Procedures

(1) Turn the main switch OFF.
(2) While pressing the numerical keys 4 and 7 of the copy quantity setting button, turn the main switch ON. This will enable the 47 Mode.

Note: Both 4 and 7 keys must be held for more than 1 second after the main switch has been turned ON.

(3) To check input signals
  (a) Using the copy quantity setting buttons, enter the code for the desired signal (sensors, etc.). For code, refer to the I/O check code list.
  (b) The magnification indicator displays the level of the signal being checked, Hi or Lo.

Note: Hi or Lo indicate the signal level applied to the CB (control board).

(4) To check output loads
  (a) Using the copy quantity setting buttons, enter the code for the desired output (load, etc.). For code, refer to the I/O check code list.
  (b) Press the copy button.
  This operation will activate a load or output a signal.

Copy button	Code	Description
Berore pressing	Input	Input signal level indication
After pressing	Output	Output load operation/signal

(5) Press the stop/clear button to disable the output.
(6) Turn the main switch OFF to cancel the 47 Mode.

[2] Input/Output Check List

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
CVR		CVR ACK signal	Normal	Abnormal	00	L1		Exposure lamp
TLD		Toner level detection signal	Yes	No	01			Toner supply motor
		Internal temperature sensor	Depends on the condition of the machine		02			Charging
					03		○	Transfer (*)
					04		○	Separation (*)
					05			
					06			
					07			
					08			
					09			
					10			
					11			Developing bias (dark-40V)
					12			Developing bias (normal-150V)
					13			Developing bias (light-280V)
					14			
SSB1		Paper size signal (Main Body/Upper)	See*1		15		○	KRDS
SSB2		Paper size signal (Main Body /Lower)			16			
PFUB		Paper size signal (DBU/Upper)			17			
SSB121		Paper size signal (DBU/Middle, LCT)			18			
SSB122		Paper size signal (DBU/Lower)			19			
PS1		Paper feed sensor (Upper)	Yes	No	20	SD1		Paper feed solenoid (Upper)
PS3		Pre-shutter sensor signal	Yes	No	21	SD2		Paper feed solenoid (Lower)
PS8		Exit detecting sensor signal	Yes	No	22			Paper feed solenoid (DBU /Upper)/LCT motor
PS111		Paper feed sensor (LCT)			23			Paper feed solenoid (DBU/Middle)
PS2		Paper feed sensor (Lower)	Yes	No	24	SD4		Bypass feed solenoid
PS121		Paper feed sensor (DBU/Upper)/ LCT upper limit sensor	Yes	No	25	SD3		Resist solenoid
PS122		Paper feed sensor (DBU/Middle)			26	SD123		Paper feed solenoid (DBU/Lower/LCT)
PS123		Paper feed sensor (DBU/Lower)/ LCT sensor			27			
					28			LCT1 solenoid
		LCT connection signal	Yes	No	29	SD5		Separation claw solenoid
PS4		Optics home position sensor signal	Yes	No	30			
					31	M2		Optics drive motor
PS7		Optics lens home position sensor signal	Yes	No	32			
					33			Lens unit drive
					34			
PS112		LCT1 paper feed sensor	Yes	No	35	SD6		Optics shutter

(*) Don't turn ON without connecting the dummy resistance.

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
PS113		LCT1 paper conveyance sensor	Yes	No	36			
					37			
					38			
					39			
					40	M1		Main motor
					41	M6		Drum drive motor
					42	M4		Cooling fan motor
					43	C(T)		Total counter
C(K)		Key counter connection signal	Yes	No	44			
					45	L2		Fixing heater lamp
					46			
					47			
					48	OB		Operation board(all light)
					49	CEL		CEL (all light)
					50			
					51			L detection adjustment
					52			
					53			
					54			
					55			L detection control data (default)
					56			
					57			
					58			L detection control data (Upon completion of L detection adjustment)
					59			L detection control data (current)
PS304		ADF interlock	OFF	ON	60	M301		ADF motor rotation (CCW)
		Changeover section interlock	Yes	No	61	M301		ADF motor reverse rotation (CW)
		ADF no paper sensor	Yes	No	62			
		ADF paper size sensor	Yes	No	63			
					64			ADF original feed solenoid
PS306		ADF original exit sensor signal	Yes	No	65			
					66			
					67			ADF paper feed clutch
					68		○	ADF speed reduction exit solenoid
					69			ADF running mode
					70			
					71			
					72			

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
					73			
					74			
					75			
					76			
					77			
					78			
		Sorter connection signal	Yes	No	79			
					80			
					81			
					82			
					83			
					84			
					85			
					86			
					87			
					88			
					89			
					90			PM count clear
					91			Drum count clear
					92			Memory initial set *2
					93			
					94			
					95			
					96			
					97			
					98	AE		AE automatic adjustment mode
					99			

*1: Indications for each paper size

Paper size	Indication
A3	4
A4	6
A4R	5
B4	0
B5	2
B5R	1
B6R	3
Universal	E
No tray	F
"8.5 × 14"	A
"8.5 × 11"	7
"8.5 × 11R"	d

<Multi-mode list>

Code	Multi-mode No.	Description
15	94	Service engineer call
		Setup call
	98	KRDS memory initialization
03	01	Normal mode output
	02	Back-side mode
04	01	Normal mode output
	02	Back-side mode
69	01	ADF test mode

*2: Note-that all memorized data (include adjustment data)are reset when memory initial set is executed.

Primary Precautions to be Observed During Maintenance

1. Before troubleshooting a particular problem, consult the operator to obtain clues that may assist in finding the problem. Who would be more familiar with the symptom of the problem than the individual that constantly operates the machine.

2. Copy Samples
   Always make copy samples before and after your maintenance service to ensure proper machine operation.

3. Drum
   - Do not expose the drum to sunlight or room light. When the drum is removed from the machine, place a cover over it.
   - When cleaning the photosensitive surface, use a cleaning pad moistened with the specified drum cleaner.
     Never use solvents other than the drum cleaner; otherwise the photosensitive material of the drum can be dissolved.

4. After maintenance is completed, remember to reset the PM counter. (47 mode, Code 90/See the adjustment section for details.)

5. Always reset the drum counter when replacing the drum. (47 mode, Code 91/See the adjustment section for details.)

⚠ **Caution**
Be sure to turn the main switch OFF and pull the plug before working on the machine.

SERVICE SCHEDULE

[1] Service Schedule

Model		Copy Q'ty / Service items	Guarantee period (5years or 400,000cps) (Unit:1,000cps) 0 30 60 90 120 150 180 210 240 270 300 330 360 390	Number of cycle
Main body		Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
		Periodic check (I) (Every 60,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ●	6
		Periodic check (II) (Every 120,000cps)	● ● ● ● ●	3
ADF	DF-204	Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
		Periodic check (I) (Every 210,000cps)	●	1
DBU	DB-607	Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
	DB-207A	Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
STR	ST-103	Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
	ST-104	Maintenance (Every 30,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13
		Periodic check (I) (Every 60,000cps)	● ● ● ● ● ● ● ● ● ● ● ● ●	6
		Periodic check (II) (Every 90,000cps)	● ● ● ● ● ● ● ● ● ●	4

[2] Maintenance Items

1. Main body (Every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Image check		○				
		Kit contents check		○				
2	Drum unit	Drum cartridge		○				
		Cleaning blade (25HA-213*)				○		Setting powder
		Separation claw (include separation claw position change)	○	○				Drum cleaner/Cleaning pad
		PCL	○					Blower brush/Cleaning pad
		CEL	○					Blower brush/Cleaning pad
		Charging corona unit (wire)	○					Cleaner knob/Blower brush
		Second paper feed driven roller	○					Blower brush/Cleaning pad
		Third paper feed driven roller	○					Blower brush/Cleaning pad
		Toner supply unit	○					Blower brush/Cleaning pad
3	Conveyance section	Transfer/Separation corona unit	○					Blower brush/Cleaning pad
		Paper conveyance guide plate	○					Blower brush/Cleaning pad
		Paper conveyance section (upper section)	○					Blower brush/Cleaning pad
4	Developing section	Developer				○		
		Developing unit		○				
		Toner density sensor	○					Blower brush
		Around the unit	○					Blower brush/Cleaning pad
5	Paper feed section	Paper feed roller (Upper/Lower)	○					Towel/Blower brush
		Paper drive roller (Upper/Lower)	○					Towel/Blower brush
		Paper driven roller (Upper/Lower)	○					Towel/Blower brush
		Bypass roller	○					Towel/Blower brush
		Sensor (PS1)	○					Blower brush
		Paper feed guide plate	○					Blower brush/Cleaning pad

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
6	Optics section	Exposure lamp	○					Blower brush/Cleaning pad
		Reflection mirrors(main and aux.)	○					Blower brush/Cleaning pad
		Lens	○					Blower brush/Cleaning pad
		First to fourth mirrors	○					Blower brush/Cleaning pad
		AE sensor	○					Blower brush
		Photo sensors	○					Blower brush
		Optics stopper felt			○			Multi oil
		Platen glass	○					Drum cleaner/Cleaning pad
		Platen cover	○					Drum cleaner/Cleaning pad
		Ozone filter (26LA1001*)				○		
		Scale plate	○					Cleaning pad
		APS sensor	○					Blower brush
7	Fixing unit section	Upper fixing roller	○					Roller cleaner/Cleaning pad
		Lower fixing roller	○					Roller cleaner/Cleaning pad
		Paper exit roller	○					Drum cleaner/Cleaning pad
		Paper exit roller/A	○					Roller cleaner/Cleaning pad
		Fixing claw	○					Roller cleaner/Cleaning pad
		Upper fixing guide plate	○					Drum cleaner/Cleaning pad
		Cleaning roller (35EA5305*)				○		
		Fixing temperature sensor 1	○					Cleaning pad/Paper/Drum cleaner
		Fixing temperature sensor 2	○					Cleaning pad/Paper/Drum cleaner
		Thermostat	○					Cleaning pad/Paper/Drum cleaner
		Sensor cleaning blade (2 pcs)	○					Roller cleaner/Cleaning pad
		Gears			○			Solvest 240
8	Final check	L detection adjustment (47 mode, Code 51) *1		○				Plas guard No.2
		Around the machine	○					
		W.U.T. check		○				Drum cleaner/Cleaning pad
		Image check (light distribution and intensity adjustments)		○				
		Unit external parts	○	○				
		Current leakage breaker		○				Drum cleaner/Cleaning pad
		PM counter reset (47 mode, Code 90) *2		○				
		Drum counter reset (47 mode, Code 91) *3		○				* Every 2PM (60,000 cps) or drum replacement

Note : *1 to*3 : Perform checking in this order.

2. ADF [DF-204] (every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Paper feed check (with enclosures removed)		○				
2	Paper feed section	Paper feed roller	○					Drum cleaner/Cleaning pad
		Paper feed belt	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Double feed prevention roller	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
3	Paper conveyance section	Paper conveyance belt	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
		Conveyance gear		○				Plas guard No.2
4	Reversal paper exit section	Reversal roller	○					Drum cleaner/Cleaning pad
		Paper exit roller	○					Drum cleaner/Cleaning pad
5	Final check	Around the unit (with enclosures mounted)	○					Cleaning pad
		Paper feed check		○				

3. DBU [DB-207A] (every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Paper feed check (with enclosures removed)		○				
2	Paper feed section	Paper feed roller	○					Drum cleaner/Cleaning pad
3	Paper conveyance section	Paper feed drive roller	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Paper conveyance side door	○					Blower brush
		Sensor	○					Blower brush
4	Final check	Paper feed check (with enclosures mounted)		○				
		External section	○					Drum cleaner/Cleaning pad

4. DBU [DB-607] (Every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Paper feed check (with enclosures removed)		○				
2	Paper feed section (LCT/PFU)	Paper feed roller	○					Drum cleaner/Cleaning pad
3	Paper conveyance section (LCT/PFU)	Paper feed drive roller	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Paper conveyance side door	○					Blower brush
		Sensor	○					Blower brush
4	Final check	Paper feed check (with enclosures mounted)		○				
		External section	○					Drum cleaner/Cleaning pad

5. STR[ST-103] (Every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Paper feed check (with enclosures removed)		○				
2	Paper conveyance section	Conveyance belt	○	○				Cleaning pad
		Feed belt	○	○				Cleaning pad
		Gate switching gear			○			Plas guard No.2
		Conveyance roller	○					Drum cleaner/Cleaning pad
		Conveyance guide plate	○					Drum cleaner/Cleaning pad
3	Stapler unit	Paper detection sensor	○					Blower brush
		Drive in a staple position	○	○				Blower brush
4	Final check	Paper feed check (with enclosures mounted)		○				Drum cleaner/Cleaning pad
		External section	○					Drum cleaner/Cleaning pad

6. STR[ST-104] (Every 30,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Supply	
1	Preparation	Paper feed check (with enclosures removed)		○				
2	Conveyance unit	Static brush (L,S)		○				
		Feed roller	○					Drum cleaner/Cleaning pad
		Sensor hole for paper remainder	○					Cleaning pad/Cotton pad
		Aligner	○					Cleaning pad
3	Drive unit	Tray pin slide groove		○				Plas guard No.2 /Cotton pad
		Carrier support slide groove		○				Plas guard No.2 /Cotton pad
		Inside of groove for transfer cam		○				Plas guard No.2 /Cotton pad
		Stapler slide groove		○				Plas guard No.2 /Cotton pad
		Shaft holder section		○				Multi oil /Cotton pad
		Gear section		○				Plas guard No.2 /Cotton pad
4	Final check	Paper feed check (with enclosures mounted)		○				
		External section	○					Drum cleaner/Cleaning pad

[3] Periodic Check Service Items

1. Main body

(1) Periodic check [I] (Every 60,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Drum unit	Drum				○		
2	Fixing unit	Upper fixing roller 26AA5305*				○		
3	Final check	Drum counter reset (47 mode, Code 91)		○				

(2) Periodic check [II] (Every 120,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
2	Fixing unit	Lower fixing roller 35EA5304*				○		

2. ADF [DF-204]

(1) Periodic check [I] (Every 210,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Paper feed section	Paper feed belt 04804027*				○		
		Double feed prevention roller 19604021*				○		

3. STR [ST-104]

(1) Periodic check [I] (Every 60,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Drive unit	Tray pin slide groove			○			Plas guard No.2/Cotton pad
		Carrier support slide groove			○			Plas guard No.2/Cotton pad
		Inside of groove for transfer cam			○			Plas guard No.2/Cotton pad
		Stapler slide groove			○			Plas guard No.2/Cotton pad
		Shaft holder section			○			Multi oil/Cotton pad
		Gear section			○			Plas guard No.2/Cotton pad

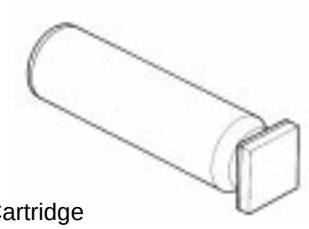
(2) Periodic check [II] (every 90,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrica-tion	Replace-ment	Supply	
1	Paper conveyance section	Static brush (L) 12QA1019*				○		
		Static brush (S) 12QA4819*				○		

COPY MATERIALS

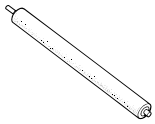
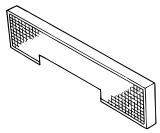
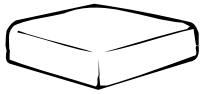
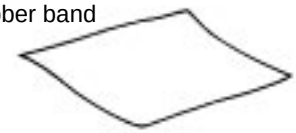
[1] Toner Kit

1. Configuration (1kit/8,000 copies)

Description	Quantity
Toner  Toner Cartridge	1 pc
Dust bag 	1 pc

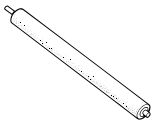
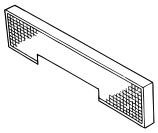
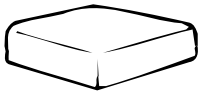
[2] PM Parts Kit

1. Configuration (1 kit/30,000 copies)

Description	Quantity
Drum cleaning blade 	1 pc
Fixing cleaning roller 	1 pc
Ozone filter 	1 pc
Cleaning pad (10pcs) 	1 pc
Polyethylene gloves 	1 set
Developer collecting sheet and rubber band 	1 pc
Dust bag and rubber band 	1 pc
Collecting hand bag 	1 pc

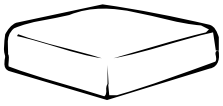
[3] Maintenance Kit

1. Configuration (1 kit/30,000 copies)

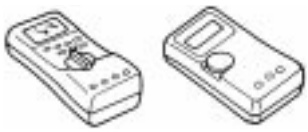
Description	Quantity
Developer 	1 pc
Drum cleaning blade 	1 pc
Fixing cleaning roller 	1 pc
Ozone filter 	1 pc
Cleaning pad (10pcs) 	1 pc

Description	Quantity
Polyethylene gloves 	1 set
Developer collecting sheet and rubbe 	1 pc
Dust bag and rubber band 	1 pc
Collecting hand bag 	1 pc

SERVICE MATERIALS

Material No.	Description	Shape	Remarks
000V-16-0	Drum cleaner		
000V-17-0	Roller cleaner		
00GR00020	Plas guard No.2		
00GR00170	Multi-oil		
00GR00210	Solvest 240		
000V-19-0	Setting powder		
000V-18-1	Cleaning pad	 1 pack	

SPECIAL TOOLS

Tool No.	Description	Shape	Quantity	Remarks
LX15-0010	Optics pulley holding jig (for replacing optics wire)		1	
25HA61651	Optics positioning plate (1)		1	
00M6-2-00	Door switch jig		1	
00V9-4-00	AE chart		1	
00VD-2002	Potential chart		1	
00VD-5000	New pyramid chart		1	
00VC-2-00	Drum cover		1	
00VD-1000	Blower brush		1	
00VE-1002 or 00VE-1003	Tester	 (00VE-1002) (00VE-1003)	1	

LIST OF MAIN DIFFERENCES BETWEEN THE K-2223 AND K-1216

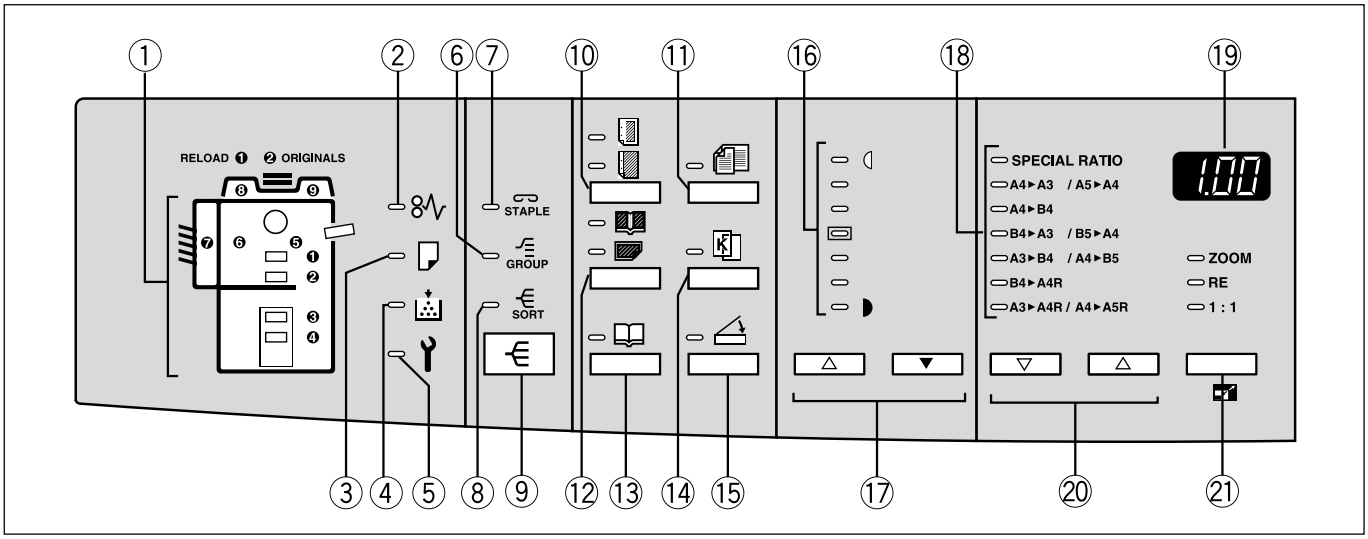
Classification	Konica 2223	Konica 1216	Reason for change
Functions	1. Continuous copy speed		• Specification change
	• 23 sheets/A4	• 16 sheets/A4	
	• 12 sheets/A3	• 12 sheets/A3	
	2. First Copy time		• Specification change
	• 5.8 sec/A4 (Manual/EE)	• 5.9 sec/A4 (Manual/EE)	
	3. Special functions		• Specification change
	• Photograph original mode Used	• Photograph original mode Not used	
Options	1. Options		• Specification change
	• ADF DF-204, DF-308	• ADF DF-204	
	• SORTER ST-103, ST-104, ST-216	• SORTER ST-103, ST-104	
	• Stapler kit 25A, 25B	• Stapler kit 25A	
	• Pedestal	• Pedestal	
	• Drawer base unit DB-107, DB-307, DB-607	• Drawer base unit DB-207A, DB-607	
	• Key counter kit	• Key counter kit	
	• Fourth mirror heater		
	• Pedestal heater	• Pedestral heater	
	• KRDS		
	• Paper conveyance kit	• Paper conveyance kit	
	• DF Adapter kit	• DF Adapter kit	

Classification	Konica 2223	Konica 1216	Reason for change
Maintenance	1. PM Cycle • Every 45,000 copies 2. Machine service life • 600,000 copies or 5 years	 • Every 30,000 copies • 400,000 copies or 5 years	• Specification change
Copy Materials	1. Drum • Common with Konica 1015, 2120 2. Developer • Exclusive for Konica 2223 3. Toner • Exclusive for Konica 2223	 • Common with Konica 2223 • Common with Konica 2223 • Exclusive for Konica 1216	• Specification change
Operation Panel	1. Operation Panel • LCD indicator 2. Operational functions • Photograph mode Used • Mixed original mode (25 mode)	 • LED indicator • Photograph mode Not Used • Mixed original mode (Exclusive button)	
Mechanism	1. Ozone shutter mechanism • Used 2. Ozone filter (material) • Exclusive	 • Not Used • Exclusive	• Because the CPM was changed

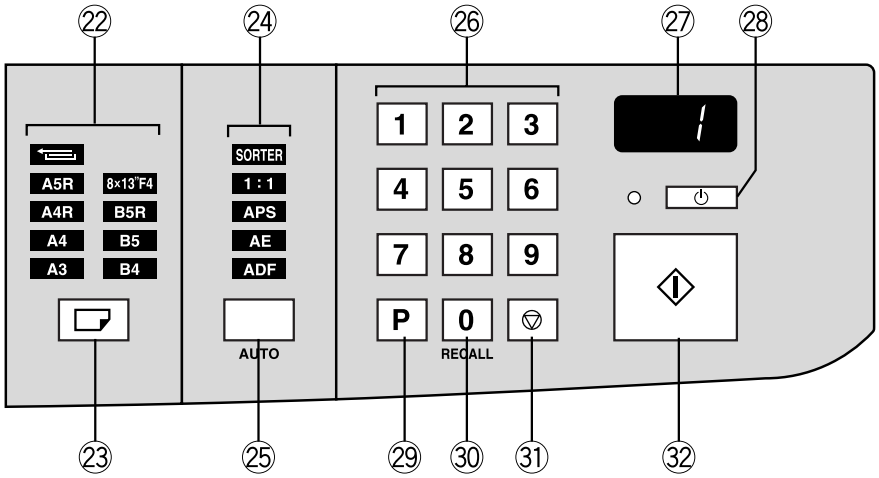
Classification	Konica 2223	Konica 1216	Reason for change
Mechanism	3. Installing place of Total counter		• To improve visibility
	• Back-side panel of the machine	• Front panel of the machine (inside front doors)	
	4. Body base (Lower main body)		• Because ADU mechanism
	• Exclusive	• Common with Konica 2120	was abolished
	5. Optic drive gear		• To improve copy quality
	• Exclusive	• Exclusive	
	6. Developing drive, input, and Agitating gears		• To improve durability
	• Exclusive (Helical gear)	• Exclusive (Spur gear)	
	7. Toner supply cover		•
	• Exclusive	• Exclusive	

Classification	Konica 2223	Konica 1216	Reason for change
Electrical	1. Optics drive motor • Exclusive	• Exclusive	• To improve copy quality
	2. Operation board • Exclusive (Right board/Left board)	• Exclusive(One board)	• Specification change
	3. Charge Collection board • Used	• Not used	• Because photograph original mode was abolished
	4. ROM1/ROM2 • Exclusive	• Exclusive	• Specification change

OPERATION PANEL

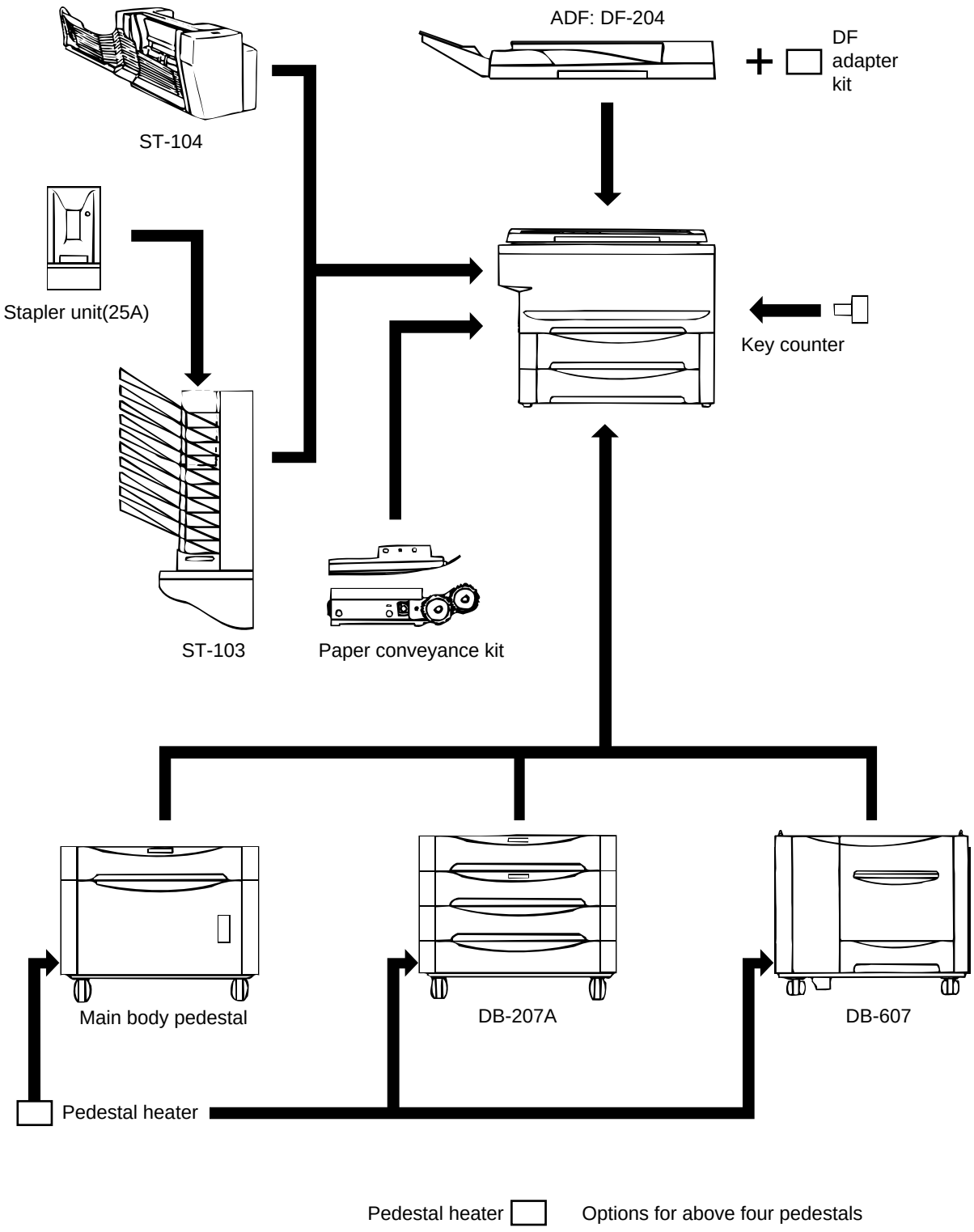


No.	Name	Function
①	Paper feed/Paper jam indicator	Indicates the selected section for paper feed (steady indication) and also indicates the location of a paper jam as a number (blinking indicator). When the tray has no paper,the indicator blinks. When a paper jam occurs during continuous copies using ADF, either ❶ or ❷ indicator will light.
②	Paper jam indicator	Indicates the location of a paper jam or paper no feed (blinking indicator).
③	Paper supply indicator	Indicates that there is no paper tray or bypass tray or cassette has no paper (blinking indicator).
④	Toner supply indicator	Indicates that toner must be supplied(blinking indicator).
⑤	Periodic maintenance indicator	Indeicates that the periodic maintenance is required.This lights when the machine must have the periodic maintenance after 1,000 copies and blinks when the machine reaches it.
⑥	Group indicator	Indicates that the group mode has been selected (steady indication).
⑦	Staple indicator	Indicates that the staple mode has been selected.(steady indication).
⑧	Sort indicator	Indicates that the sort mode has been selected (steady indication).
⑨	Sorter button	Used to select the sort,group or staple mode.
⑩	Shift/Reduction shift button	Used to select the shift mode or reduction shift mode.
⑪	Mixed Original mode button	Used to select the mixed original mode.
⑫	Fold erase/Frame erase button	Used to select the fold erase/frame erase mode.
⑬	Book copy button	Used to select the book copy mode.
⑭	OHP interleave button	Used to select the OHP interleave mode.
⑮	Auto start button	Used to select platen auto start mode (steady indication).
⑯	Copy density indicator	Indicates the selected copy density (steady indication).
⑰	Copy density button	Used to select the copy density.
⑱	Fixed magnification indicator	Indicates the selected fixed magnification (steady indication).
⑲	Magnification display	Indicates the selected magnification.
⑳	Reduction and Enlargement button	Used to select the copy magnification.
㉑	Magnification mode button	Used to select the magnification mode.



㉒	Paper size indicator	Indicates the selected paper size (steady indication. When there are no papers or no tray, it will blink.).
㉓	Paper size button	Used to select the paper size (paper tray).
㉔	Auto indication	Indicates the selected auto mode (steady indication).
㉕	Auto button	Used to select the sorter, 1:1, AE, APS, or ADF mode.
㉖	Copy quantity setting buttons	Used to set the copy quantity and code of self diagnostics and input/output checks.
㉗	Copy quantity indicator	Indicates the set copy quantity and also the ongoing copy count during a copy operation.
㉘	Power save button	Used to enter the power save mode.
㉙	P button	Used to read each setting and count.
㉚	Recall button	Used to check the set copy quantity during a copy operation.
㉛	Stop/Clear button	Used to stop a copy operation, cancel the set copy quantity, stop self diagnostic sequence, or indicate the drum counter in combination with the P button.
㉜	Copy button	Used to start copy operation, register latch operation, start self diagnostics, and write data on the static RAM (non-volatile). This indicator lights in green when copy operation can be performed and in amber when the machine is in warm-up , the lens is moving, or an abnormality occurs.

SYSTEM OUTLINE



PRODUCT SPECIFICATIONS

[1] Type

Type:	Desk top type
Copying method:	Indirect static method
Original table system:	Fixed type
Photo sensitivity material:	OPC
Sensitive method	Direct irradiation method
Paper feeding method:	Two stacked trays (250 sheets×2,80g/m²) Multi bypass feed (50 sheets, 80g/m²) DB-207A (250 sheets×2, 80g/m²) (Option) DB-607 (1000 sheets/LCT+250 sheets/ PFU, 80g/m²) (Option)

[2] Functions

Kinds of originals:	Sheets, books, solids
Original size:	A3 max.
Copy size:	A3-A5R/F4
Magnification	
Fixed magnification:	×1.00, ×0.71, ×0.82, ×0.86, ×1.15, ×1.22, ×1.41
Special ratio magnification:	1mode
Zoom magnification:	×50% to ×200% (1% step)
Warm-up time:	Approx. 65 sec. (20°C, rated voltage)*1
First copy time:	

Unit:sec.

Size	A4
Manual /AE mode	5.9

Continuous copy speed:

Unit: copy/minute at life size

Size	A4	A3
Copying speed	16	12

Continuous copies:	1 to 99
Special functions:	Auto reset Auto shut off Book copy Image shift/ Reduction shift Frame erase/Fold erase OHP Interleave Mixed original mode Auto copy Pre-heat function

[3] Copy Paper

Ordinary paper:	High quality paper (60g/m² to 90g/m²)
Special paper:	Transparencies (specified) Labels Blue print master to be deleted High quality paper (50g/m² to 59g/m²) High quality paper (91g/m² to 130g/m²)

Cautions:

When using special papers:

- Do not use two-sided coping.
- Always feed them using the multi bypass feed tray. (The feed, conveyance, and copy image performance of special papers may sometimes be inferior to that of ordinary paper (60g/m² to 90g/m²).)

[4] Options

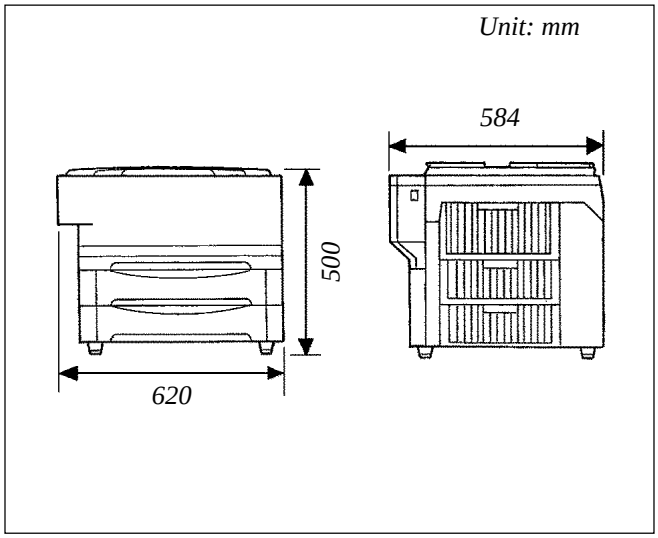
ADF:	DF-204
SORTER:	ST-103, ST-104
Stapler unit	25A
Pedestal	
Drawer base unit:	DB-207A (2PFU) DB-607 (LCT+PFU)

1015/1120 Paper conveyance kit (for necessary sorter)
DF Adapter kit (for necessary DF-204
Key counter kit
Pedestal heater

*1: 65 seconds is the machine for the 230VAC specification.
Warm-up time differs depend on the Power source (Voltage).

[5] Particulars of Machine

Power requirements: 230 VAC (–14.0% to +10.6%),
50 Hz/60 Hz
120 VAC ±10%, 60 Hz
Power consumption: 1.3 kW
Weight: Approx. 50 kg
Machine dimensions



[6] Maintenance

Maintenance: Every 30,000 copies
Machine service life: 400,000 copies or 5 years

[7] Copy Materials

Drum: OPC drum (ϕ60)
Common with Konica 2223
Developer: Common with Konica 2223
Toner: Exclusive for 1216

[8] Machine Operating Environment

Temperature: 10°C to 33°C
Humidity: 10% to 80% RH

Note: These specifications are subject to change without notice.

Konica

2223

SERVICE HANDBOOK

KONICA CORPORATION

TECHNOLOGY SUPPORT CENTER

TOKYO JAPAN

CONTENTS

SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand then before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this equipment, as well as the risk of damage to the equipment, Konica Corporation, strongly recommends that all servicing be performed only by Konica-trained service technicians.

Changes may have been made to this equipment to improve its performance after this service manual was printed. Accordingly, Konica Corporation, makes no representations or warranties, either expressed or implied, that the information contained in this service handbook is complete or accurate. It is understood that the user of this service handbook must assume all risks or personal injury and/or damage to the equipment while servicing the equipment for which this service handbook is intended.
Therefore, this Service Handbook must be read carefully before doing service work both in the course of the technical training and even after that, for keeping the correct maintenance and control of the copying machine. Keep the Service Handbook also for the future service. When it is impossible to read the description about safety and warning (due to contamination or tear), the relevant page should be replaced.

DESCRIPTION ITEMS FOR DANGER, WARNING AND CAUTION

In this Service Handbook, each of three expressions, "⚠ DANGER", "⚠ WARNING" and "⚠ CAUTION" is defined as follows together with a symbol mark to be used in a limited meaning.
When servicing, the relevant works (disassembling, assembling, adjustment, repair and maintenance) need to be conducted with utmost care.

⚠ DANGER:	**Actions having a high possibility of suffering death or serious wound**
⚠ WARNING:	**Actions having a possibility of suffering death or serious wound**
⚠ CAUTION:	**Actions having a possibility of suffering a slight wound, medium trouble and material damage**

IMPORTANT WARNING ITEMS

[1] UNAUTHORIZED MODIFICATIONS

Konica copiers have gained a reputation for being reliable products. This has been attained by a combination of outstanding design and a knowledgeable service force.

The design of the copier is extremely important. It is the design process that determines tolerances and safety margins for mechanical, electrical, and electronic aspects. It is not reasonable to expect individuals not involved in product engineering to know what effect may be caused by altering any aspect of the machine's design. Such changes have the potential of degrading product performance and reducing safety margins.

For these reasons, *installation of any modification not specifically authorized by Konica Corporation, is strictly prohibited.*

The following list of prohibited actions is not all-inclusive, but demonstrates the intent of this policy.

CAUTION:

(1) Using an extension cord or any unauthorized power cord adapter.
(2) Using any fuse that is not of a type specified by Konica.
(3) Using wire, paper, clips, solder, etc., to replace or eliminate any fuse (including temperature fuses).
(4) Removing (except for replacement) any ozone filter.
(5) Defeating the operation of relays by any means (such as wedging paper between contacts).
(6) Causing the machine to operate in a fashion other than as it was designed.
(7) Making any change which might have a chance of defeating built-in safety features.
(8) Using any unspecified replacement parts.

[2] GENERAL SAFETY GUIDELINES

This copier has been examined in accordance with the laws pertaining to various product safety regulations prior to leaving the manufacturing facility to protect the operators and service personnel from injury. However, as with any operating devise, components will break down through the wear-and-tear of everyday use, as will additional safety discrepancies be discovered.
For this reason, it is important that the technician periodically performs safety checks on the copier to maintain optimum reliability and safety.

CAUTION:

(1) Avoid injury.
(2) Ensure that the copier is disconnected from its power source before continuing.
(3) Do a job wearing clothes which make the job easy and safe.
In case that even touching driving section, there must be no possibility of any injury like rolling up clothes.

The following checks, not all-inclusive, should be made during each service call:

CAUTION:

(1) Look for sharp edges, burrs, and damage on all external covers and copier frame.
(2) Inspect all cover hinges for wear (loose or broken).
(3) Inspect cables for wear, frays, or pinched areas.
(4) Ensure that the power cord insulation is not damaged (No exposed electrical conductors).
(5) Ensure that the power cord is properly mounted to the frame by cord clamps.

WARNING:

(1) Check the continuity from the round lug (GND) of the power cord to the frame of the copier. Ensure continuity.
An improperly grounded machine can cause an electrically-charged machine frame.
(2) When an earth cable is connected to the improper position, there is a possibility of danger such as explosion or an electric shock. Therefore, the earth cable should not be connected to the following items.
a. Gas pipe
b. Lightning rod
c. Earth cable for telephone line
d. Water service pipe made of resin, and water service pipe and faucet which are not approved to be grounded by the Waterworks Bureau.

[3] SAFEGUARDS DURING SERVICE CALLS

CAUTION:

(1) Confirm that all screws, parts, and wiring and connector which are removed during maintenance are installed in their original positions.
(Especially, negligence of inserting a connector, a sandwiched cord and negligence of driving a screw should be avoided.)
(2) When disconnecting connectors, do not pull wiring, particularly on AC line wiring and high voltage parts.
(3) Do not route the power cord where it is likely to be stepped on or crushed.
(4) Carefully remove all toner and dirt adhering to any electrical units or electrodes.
(5) After part replacement or repair work, route the wiring in such a way that it does not contact any burrs or sharp edges.
(6) Do not make any adjustments outside of the specified range.

[4] WHEN USING SERVICE MATERIALS

CAUTION: Care should be exercised when using isopropyl alcohol due to its flammability. When using alcohol to clean parts, observe the following precautions.
(1) Remove power from the equipment.
(2) Use alcohol in small quantities to avoid spillage or pudding. Any spillage should be cleaned up with rags and disposed of properly.
(3) Be sure that there is adequate ventilation.
(4) Allow a surface which has been in contact with alcohol to dry for a few minutes to ensure that the alcohol has evaporated completely before applying power or installing covers.

CAUTION: Though toner and developer are harmless, pay attention not to inhale them, or not to expose eyes to them excessively. If this happens, wash eyes well with clear water and consult a doctor.

[5] ACTION TO TAKE IN THE EVENT OF A SERIOUS ACCIDENT

(1) If an accident occurs, the sales company or dealer that was notified of the accident first must take necessary emergency action to assist any injured persons and also prevent any further damage or injury.
(2) If the customer notifies you of a serious accident, promptly check the situation regarding damage, injury, and so on, and report to Sales Company. Upon receiving this report, Sales Company must report to KC.
(3) In order to determine the cause of the accident, preserve the site of the accident and also the machine itself, witness the investigation, and also follow any instructions from Sales Company or KC.

[6] SUMMARY

It is the responsibility of every technician to use professional skills when servicing Konica products. There are no short cuts to high-quality service. Each copier must be thoroughly inspected with respect to safety considerations as part of every routine service call. The operability of the copier, and more importantly, the safety of those who operate or service the copier, are directly dependent upon the conscientious effort of each and every technician.

Remember....when performing service calls, use good judgement (have a watchful eye) to identify safety hazards or potential safety hazards that may be present, and correct these problem areas as they are identified-the safety of those who operate the copier as well as those who service the copier depend on it!

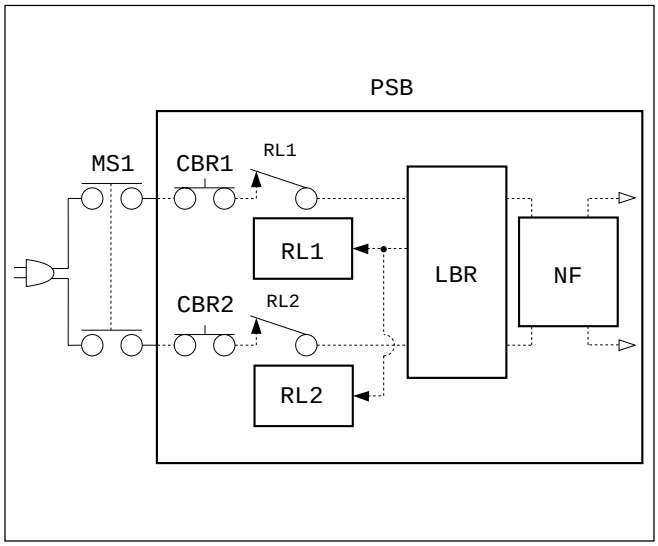
SAFETY CIRCUITS

The electrical circuit of this machine contains the following safety circuits to prevent an accident from occurring in the event of an abnormality.

[1] Overall safety circuit protector
[2] L1 (exposure lamp) overheating protection circuit
[3] L2 (fixing heater lamp) overheating protection circuit

The following explanations are provided to prevent service engineers from unintentionally disabling the safety circuits.

[1] Overall Safety Circuit Protector



1. Protection function provided by CBR (circuit breaker)

This function breaks the AC line instantaneously in the event that there is excessive current flow due to a short between the AC lines, for example.

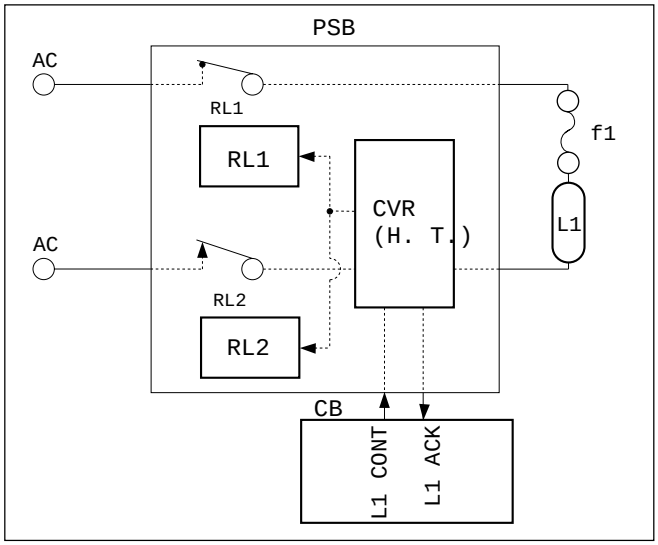
Note: The function of CBR must not be deactivated under any circumstances.

2. Protection function provided by LBR (current leakage detecting circuit)

This function turns RL1 and RL2 (main relays) OFF and breaks the AC line instantaneously in the event that leakage current flows due to a ground short in one side of the AC line, for example.

Note: The function of LBR must not be deactivated under any circumstances.

[2] L1 (Exposure Lamp) Overheating Protection Circuit



1. Protection function provided by software

When the L1 CONT signal output from the protection function by software on the CB (control board) becomes [L], L1 lights. Simultaneously, the L1 ACK signal, which indicates that L1 is lit, is output from the CVR on the PSB (power supply board) to the CB.

The CB monitors both the L1 CONT and L1 ACK signals. If they differ from each other, RL1 and RL2 (main relays) will be turned OFF and power to L1 will be cut off.

Note: The function of RL1 and RL2 must not be deactivated under any circumstances.

2. Protection function using HT (Hardware Timer circuit)

If L1 remains lit for more than approximately 15±5 seconds because of some abnormality, the hardware timer on the CVR in the PSB will operate, forcibly cutting off RL1 and RL2.

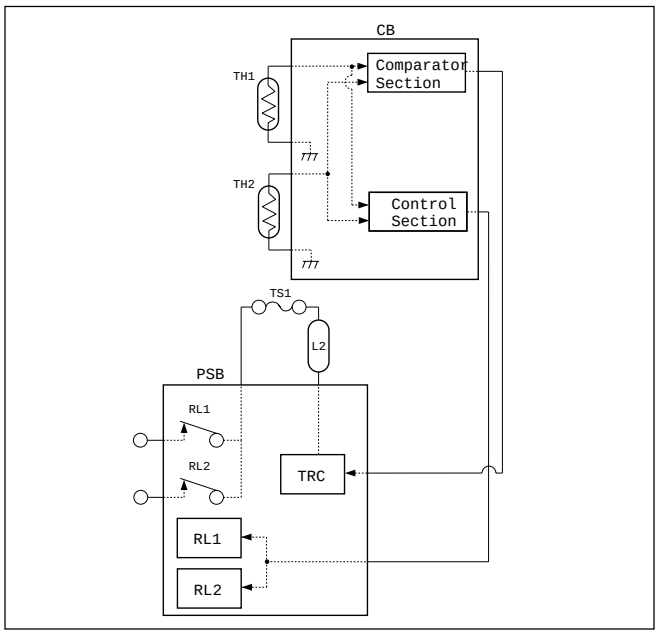
Note: The function of RL1 and RL2 must not be deactivated under any circumstances.

3. Protection function using f1 (optics temperature fuse)

If the temperature in the vicinity of f1 rises above 169°C, f1 will blow, cutting off the flow of current to L1.

Note: Do not use a piece of wire in place of f1 under any circumstances.

[3] L2 (Fixing Heater Lamp) Overheating Protection Circuit



1. Protection function provided by software

This function turns OFF L2 (fixing heater lamp), RL1, and RL2 (main relays) in the event that the output voltage from TH1 (fixing temperature sensor 1), read by the CB (control board), is abnormal.

Note: Periodically check the surfaces of TH1 and TH2 that contact the roller, and replace them if they are abnormal. The function of RL1 and RL2 must not be deactivated under any circumstances.

2. Protection function provided by hardware

This function uses a comparator circuit which compares the output voltage of TH1 and TH2(fixing temperature sensor 2) with the abnormal judgment reference value.

It disconnects L2, RL1, and RL2 from the circuit in the event that the output voltage of TH1 or TH2 exceed the reference value.

Note: Periodically check the surfaces of TH1 and TH2 that contact the roller, and replace them if they are abnormal. The function of RL1 and RL2 must not be deactivated under any circumstances.

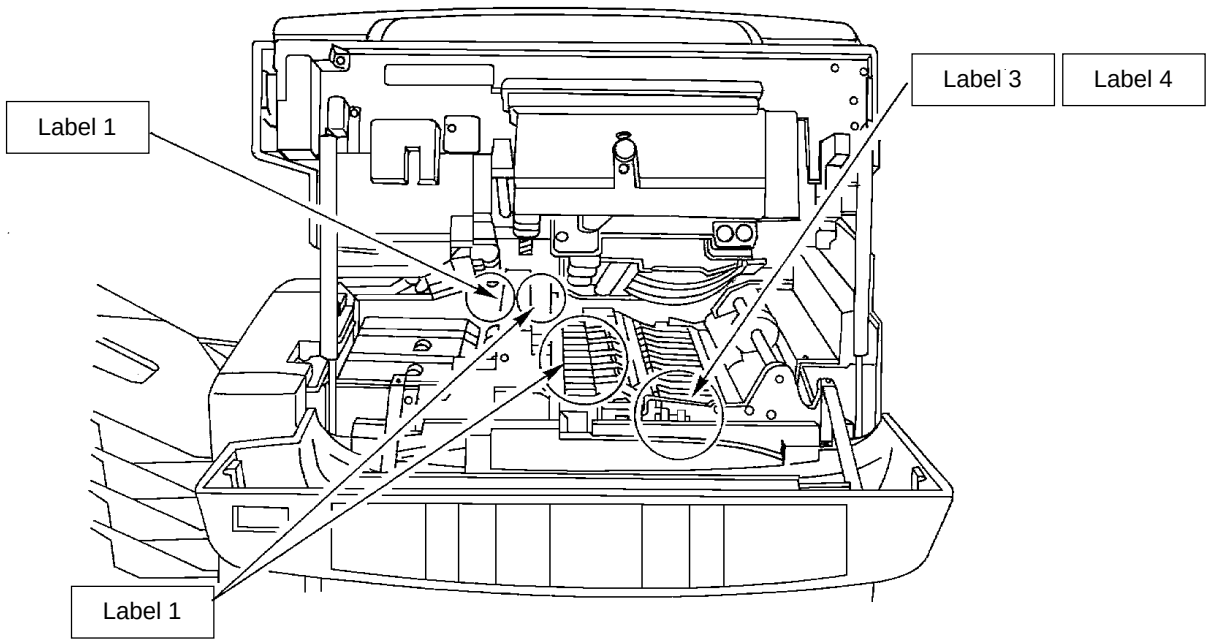
3. Protection function using TS1 (Thermostat)

If the surface temperature of the upper fixing roller exceeds a specified value, TS1 will blow, directly cutting off the flow of current to L2.

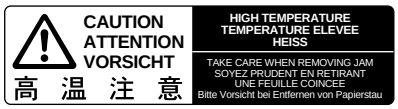
Note: Do not use a piece of wire in place of TS1 under any circumstances.

INDICATION OF WARNING OF THE MACHINE

In the machine, each unit shown below is provided with a label of caution or warning concerning safety. In the case of maintenance, repair and adjustment of the machine, take good care in doing work so that a burn or an electric shock may be avoided.



Label 1



This portion is internally very hot.
Do not touch it, lest you should get burnt.

Label 3

Label 4

This portion internally has a high voltage generated.
Never touch it, lest you should receive an electric shock.

CAUTION:

If you touch any place which you are advised by any caution label or caution indicator to keep yourself away from, you may be burned or injured. Do not remove caution label. If any caution label is removed or if any caution label or caution indicator is illegible due to any soil, clean it for making it legible. If you cannot make it legible, please contact your Service Centre.

HOW TO USE THIS SECTION

This section details adjusting items and procedures. Use this section for making adjustments and as a checklist before implementing corrective measures in the field.

1. Does the power supply meet the requirements?
2. Is the power supply properly grounded?
3. Is the machine sharing its power source with another high current consumption machine that draws large currents intermittently? (for example, an elevator, air conditioner, or other source of electrical consumption)
4. Is the installation environment suitable?
   a. Keep out of High humidity, direct sunlight, bad ventilation, etc..
   b. Make sure that the floor where the machine is installed is level.
5. Does the cause of a defective image lie in the original itself?
6. Is the density adjusting control at the proper position?
7. Are the original glass and original cover clean?
8. Is the correct paper being used for the copy?
9. Are the copying materials and parts replaced when they reach the end of their usable life? (developer, drum, cleaning blade, etc.)
10. Is there toner in the machine?

The following items should also be observed when repairing the machine.

1. Both AC power lines are disconnected when the main switch of this machine is turned off. However, the optional PTC heater remains ON and keeps high temperature since the interlock switch is turned ON. So, always unplug the machine before beginning work. If absolutely necessary to work with the power on, exercise care not to get caught in gears or scanning operation of exposure unit.
2. Take special care when handling the fixing unit since it operates at extremely high temperatures.
3. The developing unit is surrounded by a strong magnetic field. Keep watches and metering equipment away from it.
4. Avoid scarring the drum with tools or similar objects.
5. Do not touch IC pins with your bare hands.

ADJUSTMENTS WHEN REPLACING PARTS

Adjustments (including checks) and settings are required not only when a defective copy image occurs, but also after replacing or reinstalling certain parts.

[How to Use the Table]
The following items in the table are used.

1. Mode
Indicates the adjustment mode.
["47"] : 47 mode
["25"] : 25 mode
["36"] : 36 mode
[—] : Normal mode

2. Code
Indicates the applicable code.

3. VR
Caution: All VRs on the boards are for factory adjustment. Do not adjust them.
- [—] None
- Indicates the VR number on the CB (Control Board).
- Indicates the board name when VR is mounted on a board other than the CB.

4. Page
Indicates the page to refer to in the adjustment or diagnostics sections.

5. Conditions
New : Indicates adjustment (including check) is required when replacing a new part.
Re-set : Indicates adjustment (including check) is required when a part has been reinstalled.

6. Circled numbers used in the table
① , ② ..... : Indicates there is a priority sequence for adjustments (including check) and settings.
◯ : Indicates adjustments (including checks) and settings which can be carried out independently.

	No.	1	2	3	4	5	6	7	8	9	10	11	12	13
	Adjustment and Setting Items	Adjusting L Detection (Toner Density)	AE Automatic Adjustment	Light Intensity Adjustment	Leading Edge Timing Adjustment	Vertical Magnification Adjustment	Horizontal Magnification Adjustment	Lead Edge Erasure Width Adjustment	Light Distribution Adjustment	Distortion Adjustment	Focus Adjustment	Trail Edge Erasune Width Adjustment	HP to Original Lead Edge Distance Adjustment ∗2	Checking and Resetting the Drum Counter
	Mode	"47"	"47"	"36"	"36"	"36"	"36"	"36"	–	–	–	"36"	"36"	"47"
	Code	51	98	90	91	93	95	92	–	–	–	96	97	91
	VR	–	–	–	–	–	–	–	–	–	–			

No.	Part name	Page / Conditions	6-24	6-24	6-29	6-29	6-30	6-30	6-31	5-5	5-6	5-7	6-32	6-32	5-4
1	Drum	New		4	3				5	2			6		1
2	CB (Control Board) ∗1	New													
3	Memory IC	New	1	9	4	6	2	3	7				8	5	
4	L1 (Exposure lamp)	New		3	2				4	1			5		
5	Optics wire	New, Re-set		8	7	5	3		9	6	1	2	0	4	
6	Exposure unit	New, Re-set		5	4			1	6	3		2	7		
7	AE sensor	New		○											
8	Developing	New	○		○					○					
9	DCPS	New		2	1										
10	M2 (Optics drive)	New, Re-set				5	3		6		1	2	7	4	
11	Other parts for optics drive	New, Re-set				5	3		6		1	2	7	4	

- "New" means replace with a new unit. "Re-set" means re-installation.
- If there is a priority sequence to adjustment, it is indicated as a number inside the circle.
- When replacing the memory IC, carry out the necessary settings in the 25 mode. In addition, replace developer and adjust L detection. [Copy counter (developer fatigue correction, drum fatigue correction) data are cleared by L detection adjustment.]

*1: Excluding the memory IC

*2: Before performing "HP to Original Lead Edge Distance Adjustment", set the lead edge erasure width adjustment data (at 100% and 50%) to zero.

ADJUSTMENTS WITH THE P BUTTON

Adjustments that can be made with the P button include changing and displaying various parameters, and are therefore referred to as "P functions". P functions may be broadly divided into those available to the end-user and those exclusively for the Service technician.
In this section, the functions available to service technician are explained. With regard to the functions available to the end-user (items having a mark of "*"), refer to "Various Settings in Operation Section".

[1] P Function List

	Function
	Checking and resetting the PM counter
	Checking and setting the developing bias shift
	Checking and resetting the drum counter
	Indication of copy count/total count
*	Registration of arbitrary magnifications
*	Setting the frame erase width
*	Setting the fold erase width
*	Checking the maximum jump magnification
*	Checking the minimum jump magnification

[2] P Function Operating Procedures

(1) Turn the main switch ON.
(2) While holding the P button, press the applicable button on the operation panel.
(3) Check data that will be displayed in the copy quantity indicator or press the applicable button on the operation panel to change data entries.
(4) Turn the main switch OFF.

[3] Checking and Resetting the PM Counter

1. Checking procedures

Step	Operation (Indication)	Entry terminal
1	While pressing the P button, press the "5" key.	P button Copy quantity setting button
2	Check the PM count on the LCD panel, or the copy quantity indicator.	

2. Resetting procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 47 mode.	
2	Enter code 90.	Copy quantity setting button
3	Press the copy button.	Copy button

[4] Checking and Resetting the Developing Bias Shift

1. Setting procedures

Step	Operation(Indication)	Entry terminal
1	While pressing the P button, press applicable copy quantity setting button for more than 2 seconds. (See note 1 below.)	P button Copy quantity setting button
2	Check the bias shift level (L0 to L3) in the LCD panel.	

Note 1: Developing bias shift

Copy quantity setting button	Developing bias indication
0	L0 (Standard: –150V)
2	L1 : –180 V
4	L2 : –200 V
6	L3: –130 V

2. Checking procedures

Step	Operation (Indication)	Entry terminal
1	While pressing the P button, press the “3” key.	P button Copy quantity setting button
2	Check the level of the developing bias shift in the copy quantity indicator. (See Note 2 below.)	

Note 2: Developing bias voltage for each level

Indication	Developing bias voltage
L0 (Standard)	–150 V
L1	– 180 V
L2	– 200 V
L3	– 130 V

[5] Checking and Resetting the Drum Counter

1. Checking Procedures

Step	Operation (Indication)	Entry terminal
1	While pressing the P button, press the “7” button.	P button Copy quantity setting button
2	• Check the drum count value in the LCD panel. • Or, check the drum count value in the copy quantity indicator. The drum count will be displayed two digits at a time in sequence.	

2. Resetting Procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 47 mode.	
2	Enter code 91.	Copy quantity setting button
3	Press the copy button.	Copy button

[6] Checking the Copy Counter/Total Counter

Note: When 25 mode, address P11 is set to “0”, the total count will be displayed.
When 25 mode, address 11 is set to “1”, the copy count will be displayed.

Step	Operation (Indication)	Entry terminal
1	While pressing the P button, press the “1” key.	P button Copy quantity setting button
2	• Check the drum count value in the LCD panel. • Or, check the copy count value in the copy quantity indicator. The copy or total count will be displayed two digits at a time in sequence.	

[7] Checking the ROM Version

Step	Operation (Indication)	Entry terminal
1	While pressing the P button, press the “8” key.	P button Copy quantity setting button
2	Check ROM version number on the LCD panel.	

OTHER ADJUSTMENT

[1] Light Distribution Adjustment

1. Tools required

- Phillips-head screwdriver
- Potential chart

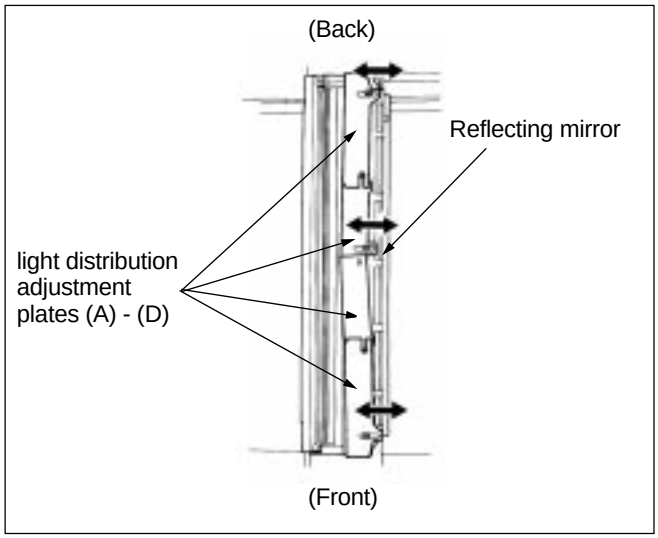
2. Adjustment procedures

Caution:

- Always turn the main switch OFF before removing the original glass.

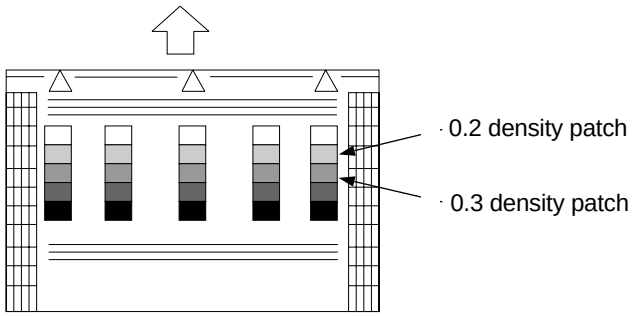
Caution:

- When the gray scale of the copied potential chart is extremely unbalanced, first perform a rough light intensity adjustment. After completion of this adjustment, perform a thorough light intensity adjustment. (For light intensity adjustment, refer to 36 mode of diagnostics section.)



Step	Operation (Indication)
1	Turn the main switch ON.
2	Set “2” as copy quantity, using the copy quantity setting button.
3	Adjust the copy density so that 0.2 density patches of the potential chart can be copied, then copy it.
4	Check to see if the density of the 5-point step chart is uniform from left to right. When the copied chart is uniform, this adjustment can be finished. When not uniform, perform procedures below to adjust it.
5	Turn the main switch OFF and remove the original glass.
6	Move the light distribution adjustment plates (A) - (D) until the image density becomes uniform. If the front side of the copied paper is dark, move the front side of the plate to the paper exit side or the back side of the plate to the paper feed side. If the back side of the copied paper is dark, move the back side of the plate to the paper exit side or the front side of the plate to the paper feed side.
7	Install the original grass, turn the main switch ON, and copy the potential chart again.
8	Check to see if the density of the 5-point step chart is uniform from left to right. Repeat steps 5 to 8 until the standard given below is met.

Standard: 0.2 to 0.3 density patches must be consistent.

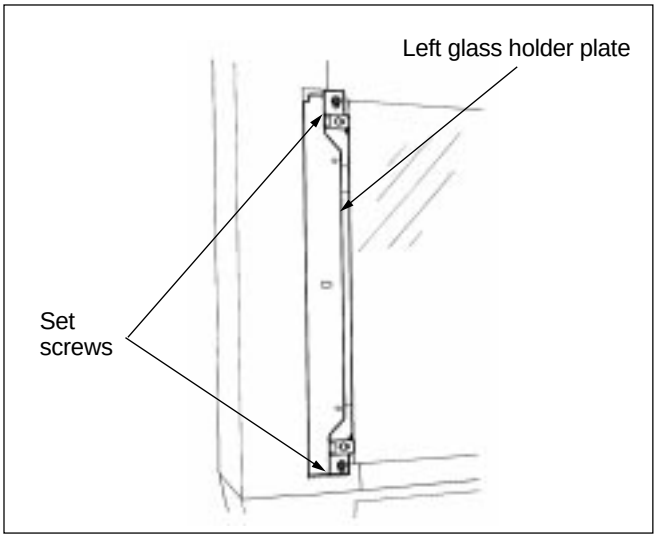


[2] Center Adjustment

1. Tools required

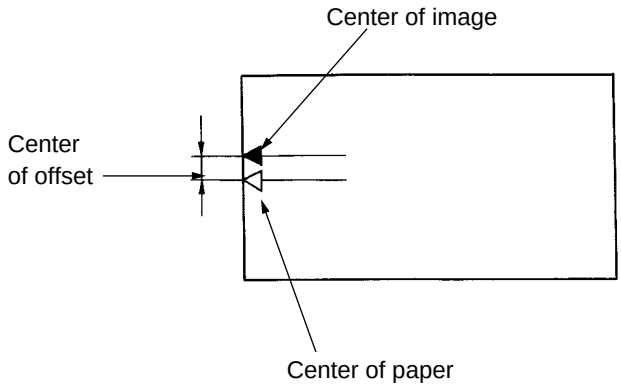
- Phillips-head screwdriver
- Pyramid chart(A3)

2. Adjustment procedure



Step	Operation
1	Remove the scale plate.
2	Loosen the 2 set screws of the left glass holder plate. Move the plate forward or backward and perform mis-centering adjustment.
3	Tighten the 2 set screws and check the centering adjustment.
4	Repeat 1 to 3 until offset meets the standard.

Standard: Centering offset ····· Within 2 mm



[3] Distortion Adjustment

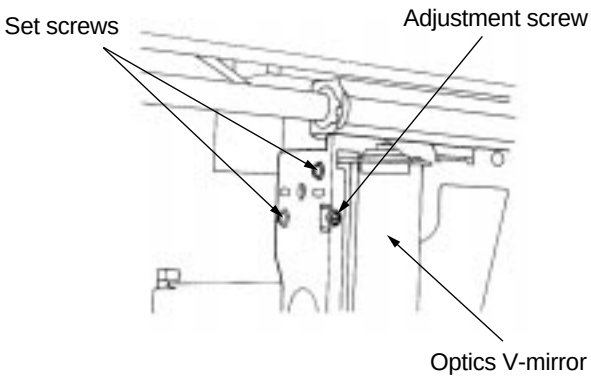
1. Tools required

- Phillips-head screwdriver
- Pyramid chart(A3)

2. Preparation

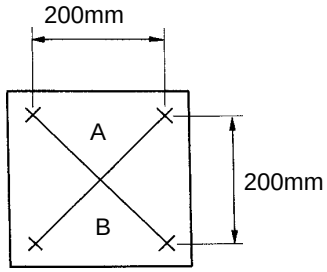
(1) Remove the original glass

3. Adjustment procedure



Step	Operation
1	Loosen the 2 set screws, then move the rear side of the optics V-mirror upward or downward for the distortion adjustment.
2	Tighten the set screws and check the distortion.
3	Repeat 1 to 2 until distortion meets the standard.

Standard: Within 0.3% at 1:1 ratio.
The difference between the diagonal lines (A and B) of a 200mm square is within 1.4mm. (Within 0.5% except 1:1 ratio.)



| A-B | <1.4mm

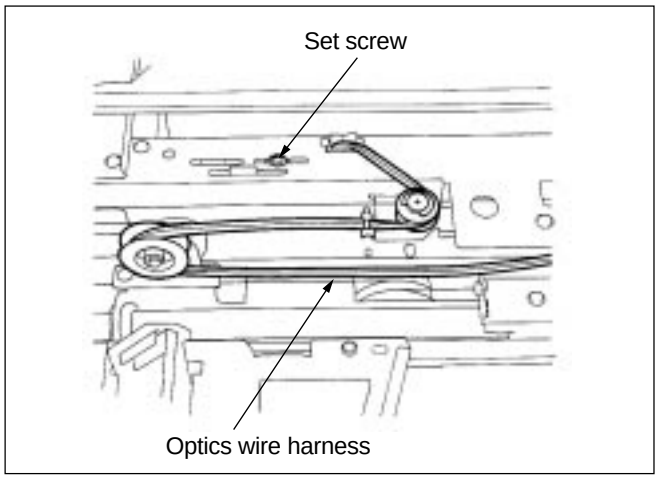
[4] Focus Adjustment

1. Tools required

- Phillips-head screwdriver
- Pyramid chart(A3)

2. Preparations

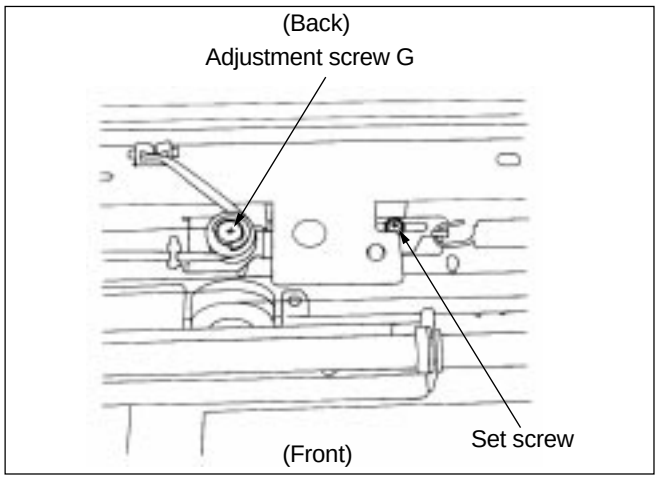
(1) Remove the original glass.
(2) Remove the upper rear cover.
(3) Loosen the set screw for optics wire harness.



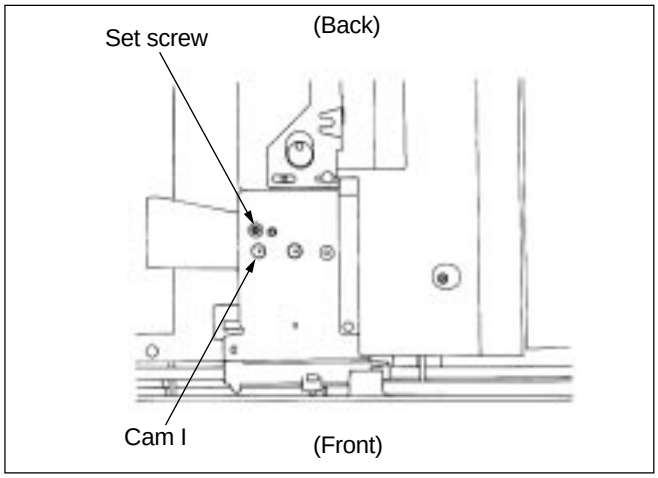
(4) When adjusting focus on enlargement, remove the 4th mirror cover.

3. Adjustment procedures

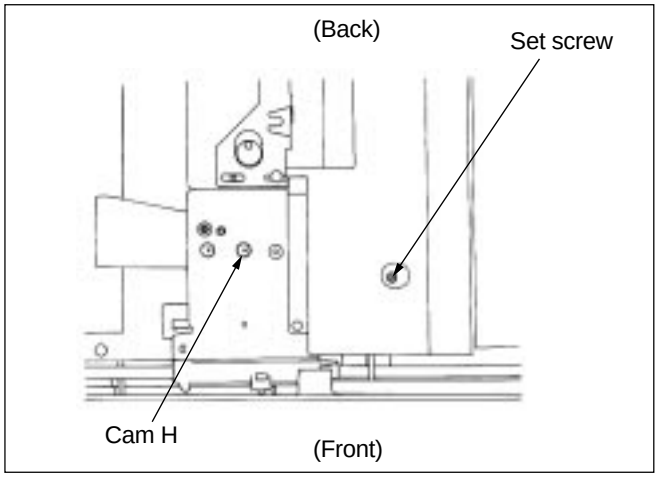
Caution:
- Before copying to check focus adjustment, remember to reinstall the optics wire harness properly and tighten the set screw.
- At 1:1 ratio.
  Loosen the set screw. Using the focus adjustment screw G, perform focus adjustment.



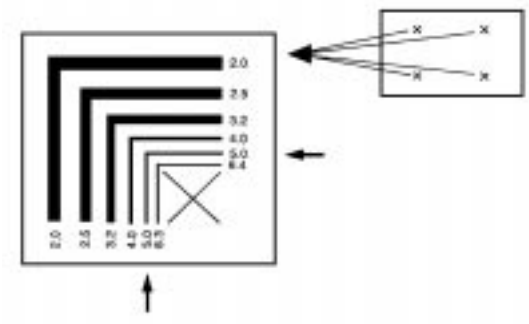
- At reduction ··· Loosen the set screw of the lens unit section. Using the cam I, perform focus adjustment.



- At enlarge ····· Loosen the set screw of the lens unit section. Using the cam H, perform focus adjustment.



Standard resolution:
At 1:1 or enlargement : More than 5 lines
At 0.99 to 0.82: More than 4 lines
At 0.81 to 0.65: More than 3.2 lines
At 0.64 to 0.50 : More than 2.5 lines



[5] LCT Size Selection

Select the paper size for the LCT tray.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P82.	Copy quantity setting button
3	Set the data. 0: (A3) 1: (B4) 2: A4R 3: B5R 4: A4 5: B5 6: (B6) 7: (8.5×14) 8: 8.5×11R 9: 8.5×11 Note: Sizes in ( ) can not be used.	Copy quantity setting button
4	Press the copy button.	Copy button

[6] Adjusting ADU gear timing

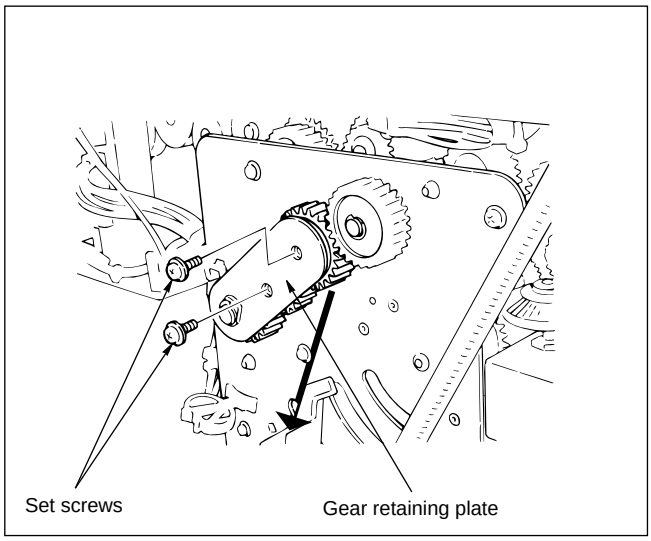
1. Tools used

- Phillips screwdriver
- Standard (-) screwdriver

2. Procedure

(1) Remove the DB rear cover.

(2) Remove the two set screws, then release the gear retaining plate in the direction indicated by the arrow.

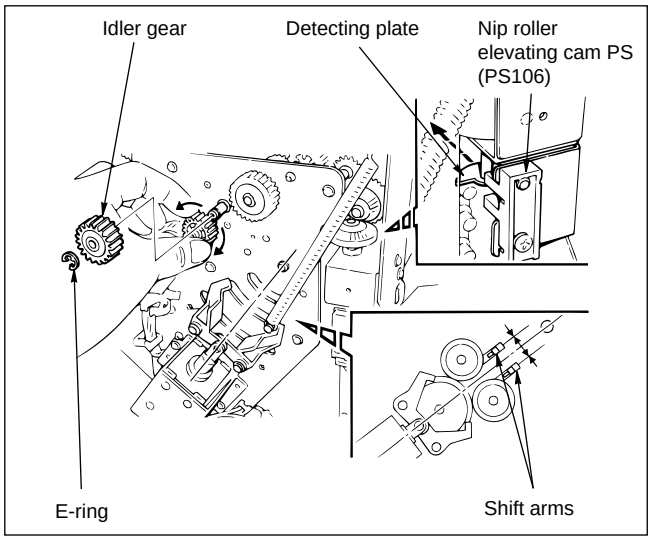


(3) Remove the idler gear by removing the E-ring.

(4) Face the detecting plate of the nip roller elevating cam PS (PS106) as shown in the figure below.

(5) Turn the ADU drive motor (M101) by hand to parallel the two changeover/clutch lever shift arms with the center line which connects the center of the solenoid (SD101) and the fulcrum pin of the lever as shown.

(6) Reinstall the idler gear and secure it with the E-ring.



(7) Reinstall the gear retaining plate and secure it with the two set screws.

(8) Reinstall the DB rear cover.

[7] Adjusting nip roller elevating cam timing

1. Tools used

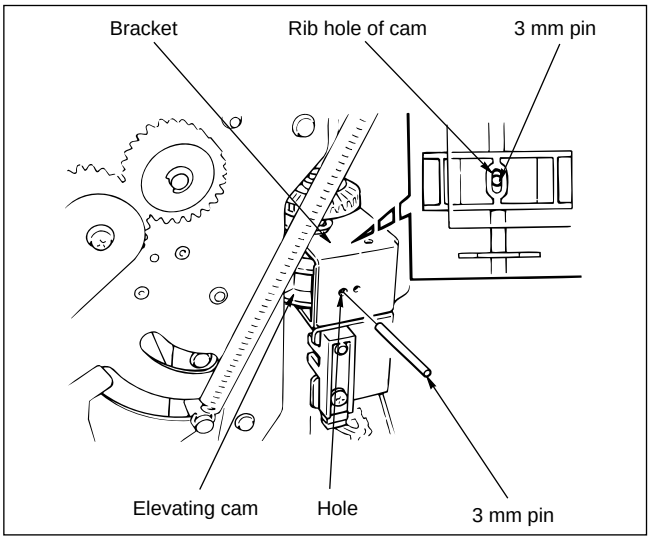
- Phillips screwdriver
- Two 3 mm pins

2. Procedure

(1) Remove the following covers (see “ADU NIP ROLLER DRIVE SECTION”).
- DB Rear cover
- DB Left side cover
- ADU front door
- Gear cover

(2) Remove the nip rollers.

(3) Align the rib holes of the front and rear nip roller elevating cams with the holes in the brackets, then insert the 3 mm pins.



(4) Reinstall the nip rollers.

(5) Remove the 3 mm pins.

(6) Reinstall the removed parts in the reverse order of removal.

[8] Adjusting the ADU changeover gate position

1. Tools used

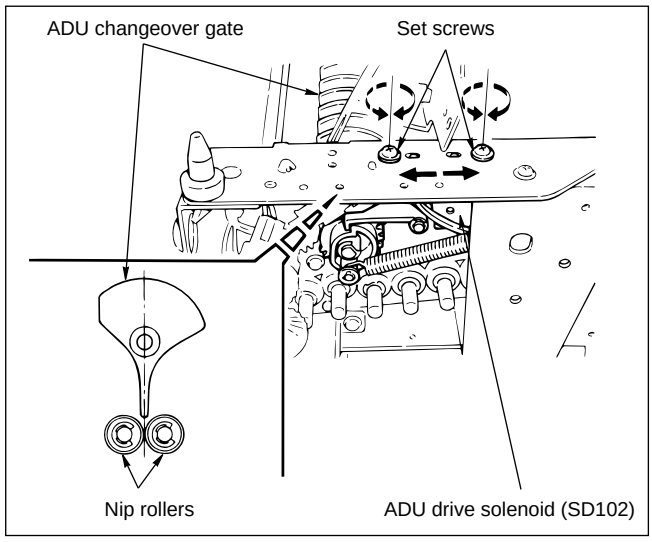
- Phillips screwdriver

2. Procedure

(1) Remove the ADU changeover conveyance guides.

(2) Loosen the two set screws securing the ADU drive solenoid (SD102).

(3) Align the lower end of the ADU changeover gate with just between the nip rollers as shown by moving the solenoid.



(4) Tighten the two set screws.

(5) Reinstall the removed parts in the reverse order of removal.

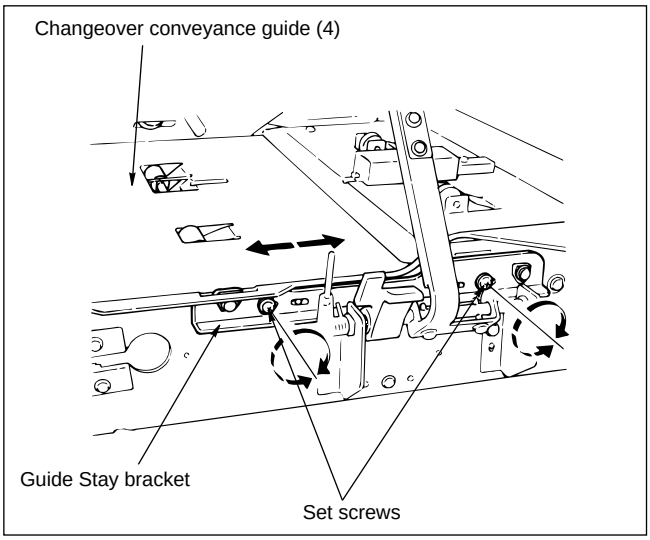
[9] Adjusting paper skew

1. Tools used

- Phillips screwdriver

2. Procedure

(1) Draw the LCT tray out.
(2) Loosen the two set screws securing the changeover conveyance guide (4) and adjust by moving the guide right or left.
(3) Tighten the two set screws.



VARIOUS LISTS

[1] TP

1. CB(Control Board)

a. TP

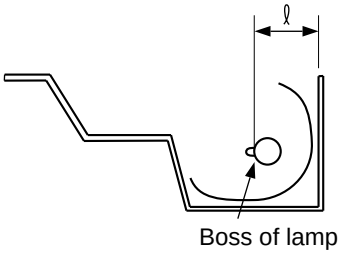
No.	Item	Remarks
TP1	10VDC	
TP2	LCD	
TP3	REF	
TP5	CVRPWM	
TP10	M-RST	
TP11	WR	
TP12	CLK	
TP13	OPT-REF	
TP14	OPT-EN	
TP15	OPT-CLK	
TP16	EE-SIG	
TP17	SUB	
TP18	MAIN	
TP19		
TP20	RD	
TP21		
TP23	ES5V	
TP24	S5V	
TP25	SGND	
TP26	PGND	
TP27		
TP28	CLK0	
TP29	EXRAMCS	
TP30	ZERO-CROSS	
TP31	RESET	

2. PSB(Power Supply Board)

a. TP

No.	Item	Remarks
TP1	AC IN (HOT)	
TP2	AC IN (NEUTRAL)	

[2] Standard Value for Each Part

Item	Description	Standard value	Remarks
Drum unit section	Clearance between the drum and separation claws	SD OFF : 0 < Drum and separation claw clearance≦ 1mm	
		SD ON : 0 mm	
Cleaning section	Clearance between the drum and cleaning blade	0 mm	with pressure applied
Fixing unit section	Clearance between the fixing temperature sensor 1 (middle)/sensor 2(end) and upper fixing roller	0 mm	
	Clearance between the thermostat and upper fixing roller	0 mm	
Optics section	Location of the exposure lamp 	ℓ = 13.1 ~ 13.4 mm	

25 MODE

[1] Setting procedures

A special operating mode called the 25 Mode has been provided exclusively for specifying various settings. This mode allows data in memory IC to be rewritten.

(1) Turn the main switch OFF.
(2) While pressing the numerical keys 2 and 5 of the copy quantity setting button, turn the main switch ON. This will enable the 25 Mode. The 25 Mode is used exclusively to rewrite in memory and, therefore, does not support normal copy operations.
(3) Using the copy quantity setting buttons, specify the address number of the data to be changed.
  (a) Press the P button.
  The address number will blink in the magnification indicator.
  (b) Enter the desired address number using the copy quantity setting buttons.
  The newly-entered address number will blink in the magnification indicator.
  (c) Press the P button.
  The blinking address number will be lit.
(4) Rewrite the data currently stored in that address.
  (a) Enter the new data using the copy quantity setting buttons.
  The old data appears in the tens digit position of the copy quantity indicator and newly-entered data in the ones digit position.
  (b) Press the copy button.
  This will rewrite the data and change the copy quantity display to show the new data in the tens digit position.
(5) Turn the main switch OFF to exit the 25 Mode.

[2] Auto start original Selection

This setting specifies the original size which the auto start can not be used.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P10.	Copy quantity setting button
3	Select the data. 0 : Auto start is not available for B5R or smaller originals. 1 : Auto start is not available for B5R or smaller originals only when APS. 2 : Auto start is not available for all originals.	Copy quantity setting button
4	Press the copy button.	

[3] Counter Selection

This setting specifies which the copy or total counter is selected for display.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P11.	Copy quantity setting buttons
3	Select the data. 0 : Total count 1 : Copy count	Copy quantity setting buttons
4	Press the copy button.	

[4] Copy Quantity Setting Limit Selection

This setting selects the limit of the copy quantity setting.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	Copy quantity setting buttons
2	Specify address P13.	Copy quantity setting buttons
3	Select the data. 0 : Max 5 : 10 1 : 1 6 : 20 2 : 3 7 : 30 3 : 5 8 : 50 4 : 9 9 : 99	Copy quantity setting buttons
4	Press the copy button.	

[5] Message Language Selection

This setting selects message language on the LCD panel.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P14.	Copy quantity setting button
3	Select the data. 0 : English 1 : French 2 : German 3 : Italian 4 : Spanish	Copy quantity setting button
4	Press the copy button.	

[6] Preferential Paper Size Selection

This setting specifies the paper size to be used with 1st priority.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P16.	Copy quantity setting buttons
3	Select the data. <Europe> <USA> 0 : A3 11 × 17 1 : A4 8.5 × 14 2 : A4R 8.5 × 11 3 : 8.5 × 11 8.5 × 11R 4 : 8.5 × 11R 5.5 × 8.5 5 : 8.5 × 14 SPECIAL 6 : B6 8.5 × 11 7 : B5R 8.5 × 11 8 : B5 8.5 × 11 9 : B4 8.5 × 11	Copy quantity setting buttons
4	Press the copy button.	

[7] Original turn back selection

This setting selects max. number of sheets for original turn back mode.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P18.	Copy quantity setting button
3	Select the data. 0 : Max. 10 sheets 1 : Max. 20 sheets <Outline of operation> The original turn back is effective in 2→2 mode only. After stacking and re-feeding the first 10 sheets, the original is reversed again in order to stack and refeed another 10 sheets.	Copy quantity setting button
4	Press the copy button.	

[8] Auto Low power mode Time Setting

This setting specifies when to go into Auto Low Power mode.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P19.	Copy quantity setting buttons
3	Select the data. 0 : None (Only for Europe) 1 : 2 minutes 2 : 5 minutes 3 : 10 minutes 4 : 15 minutes 5 : 30 minutes (Other than Europe only)	Copy quantity setting buttons
4	Press the copy button.	

[9] Auto shut off mode selection

This setting selects auto shut off is available or not.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P20.	Copy quantity setting button
3	Select the data. 0 : Auto shut off is available. 1 : Auto shut off is not available.	Copy quantity setting button
4	Press the copy button.	

[10] Auto Start Release Time Selection

This setting selects auto start release time.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P21.	Copy quantity setting buttons
3	Select the data. 0 : 10 sec. 1 : 20 sec. 2 : 30 sec. 3 : Not released	Copy quantity setting buttons
4	Press the copy button.	

[11] ADF Frame Erase Selection

Set the ADF frame erase.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P26.	Copy quantity setting buttons
3	Select the data. 0: None 5: 5 mm frame	Copy quantity setting buttons
4	Press the copy button.	

[12] PM Cycle Specification

This setting specifies the number of copies at which to display the PM indication.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify an address for the PM cycle. P27 : 5th digit (10^4) P28 : 4th digit (10^3)	Copy quantity setting buttons
3	Enter a value for the PM cycle.	Copy quantity setting buttons
4	Press the copy button.	

Note: Follow steps 2 to 4 to enter data into address as P27 and P28.

[13] Minimum Original Size Detection Selection

This setting selects minimum original size which can be detected.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P45.	Copy quantity setting buttons
3	Select the data. <Europe> <USA> 0 : B5R 8.5×11R 1 : A5R 5.5×8.5 2 : B5R 8.5×11	Copy quantity setting buttons
4	Press the copy button.	

[14] Sorter Initial Mode Setting

This setting specifies the operating mode the sorter should enter in its initial state.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P46.	Copy quantity setting buttons
3	Select the data. 0 : Non-sorter mode priority 1 : Sort priority 2 : Group priority 3 : Sort/Staple priority	Copy quantity setting buttons
4	Press the copy button.	

[15] Clearing Fixing Failures

This setting resets fixing failures, F34, F35, and F36.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P47.	Copy quantity setting buttons
3	Set the data to 0.	Copy quantity setting buttons
4	Press the copy button.	

[16] Auto Reset Setting

Specify whether or not auto reset is to take place.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P48.	Copy quantity setting buttons
3	Select the data. 0 : No auto reset 1 : Auto reset (Europe 90sec., USA 120sec.)	Copy quantity setting buttons
4	Press the copy button.	

[17] Clearing Current Leakage / Main Relay Failure

This setting resets current leakage / Main Relay failure, F09.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P49.	Copy quantity setting buttons
3	Set the data to 0.	Copy quantity setting buttons
4	Press the copy button.	

[18] Double Count Specification for A3 Copies

This setting specifies the number of units to count for an A3 copy.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P50.	Copy quantity setting buttons
3	Select the data. 0 : 1 count 1 : 2 counts	Copy quantity setting buttons
4	Press the copy button.	

[19] Initial Tray Setting for APS Canceling

This setting selects the initial tray when APS is canceled.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P51.	Copy quantity setting buttons
3	Select the data. 0 : Tray 1 1 : Tray 2 2 : Tray 3 3 : Tray 4 4 : Tray 5 (Japan only) 5 : Bypass tray	Copy quantity setting buttons
4	Press the copy button.	

[20] Auto Tray Selection

Specify whether or not auto tray function is to be selected.

Step	Operation (indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P53.	Copy quantity setting buttons
3	Select the data 0 : Non-selection 1 : Selection	Copy quantity setting buttons
4	Press the copy button.	

[21] Auto Start Button Function Selection

This setting selects the auto start or mixed original function when ADF is installed.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P54.	Copy quantity setting buttons
3	Select the data. 0 : Auto start function (Platen machine) Mixed original function (ADF machine) 2 : Auto start function (both Platen/ADF machines)	Copy quantity setting buttons
4	Press the copy button.	

[22] Energy Star initial mode selection

This setting selects the Energy Star initial mode.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P55.	Copy quantity setting button
3	Select the data. 0 : 1→1 mode 1 : 1→2 mode 2 : 2→1 mode 3 : 2→2 mode	Copy quantity setting button
4	Press the copy button.	

[23] Auto Button Function / Auto Function Setting when an Original is placed in the ADF and ADF is opened.

Set the copy mode that is to be activated when the auto button is pressed, when an original is placed in the ADF or when ADF is opened.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P56.	Copy quantity setting buttons
3	Select the data. 0 to 9 : (See *1.)	Copy quantity setting buttons
4	Press the copy button.	

*1

Data	Auto button function	Operation when placing original in ADF	APS selection when opening ADF
0, 8	Full auto	ADF selection	Stillness APS selection
1,9	Individual selection [25-P58P]	ADF selection	Stillness APS selection
2	Full auto	Full auto	Stillness APS selection
3	Individual selection [25-P58P]	Individual selection [25-P58P]	Stillness APS selection
4	Full auto	ADF selection	Stillness APS non-selection
5	Individual selection [25-P58P]	ADF selection	Stillness APS non-selection
6	Full auto	Full auto	Stillness APS non-selection
7	Individual selection [25-P58P]	Individual selection [25-P58P]	Stillness APS non-selection

* “Placing original in ADF” is original setting from platen mode.
* “APS selection when opening ADF” is on condition that APS is not selected when opening ADF.

[24] Key Counter Operation Specification

This setting specifies how the copier should operate when the key counter is removed during a copy.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P57.	Copy quantity setting buttons
3	Select the data. 0 : Stop after the paper for the ongoing copy operation has exited. 5 : Stop immediately.	Copy quantity setting buttons
4	Press the copy button.	

[25] Initial Mode Setting

This setting selects the modes the copier should enter in its initial state.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P58.	Copy quantity setting buttons
3	Select the data. 0 to 7 : See note below.	Copy quantity setting buttons
4	Press the copy button.	

Note: Corresponding data
For data “7”, the manual mode is set to first priority.

Data	ADF	APS	AE
0	Priority	Priority	Priority
1	Non-priority	Priority	Priority
2	Priority	Non-priority	Priority
3	Non-priority	Non-priority	Priority
4	Priority	Priority	Non-priority
5	Non-priority	Priority	Non-priority
6	Priority	Non-priority	Non-priority
7	Non-priority	Non-priority	Non-priority

[26] AMS Mode Priority Setting

This setting selects priority of AMS or Life-size.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P59.	Copy quantity setting buttons
3	Select the data. 0 : Life-size mode (original table/ADF) 1 : AMS mode(original table) Life-size mode(ADF) 2 : Life-size mode (original table) AMS mode(ADF) 3 : AMS mode (original table/ADF)	Copy quantity setting buttons
4	Press the copy button.	

[27] User's Bias Shift Selection

This setting selects bias voltage for developing.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P60.	Copy quantity setting buttons
3	Select the data. 0 : L0 (–150V:Standard) 1 : L1 (–180V) 2 : L2 (–200V) 3 : L3 (–130V)	Copy quantity setting buttons
4	Press the copy button.	

[28] Mixed Original Function Selection

This setting selects the use of the mixed original function.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P61.	Copy quantity setting buttons
3	Select the data. 0 : Not used 1 : Used	Copy quantity setting buttons
4	Press the copy button.	

[29] Auto Shut Off Timer Setting

This setting selects a time period for the auto shut off timer.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P62.	Copy quantity setting buttons
3	Select the data. 0 : 30 min. 1 : 60 min. 2 : 90 min. 3 : 120 min.	Copy quantity setting buttons
4	Press the copy button.	

[30] Odd Number of Original Count Mode Selection

This setting selects the use of odd number of original count mode.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P63.	Copy quantity setting buttons
3	Select the data. 0 : Not used 1 : Used	Copy quantity setting buttons
4	Press the copy button.	

[31] Priority of Original / Transfer Sheet Selection

This mode selects the priority for creating copy image.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 Mode.	
2	Specify address P70.	Copy quantity setting button
3	Select the data. 0 - 3: (See *1.)	Copy quantity setting button
4	Press the copy button.	

*1: Original mode makes image under priority of original. Transfer sheet mode makes image under priority of paper size selected.

Setting	Mode	Erasure control conditions
0	All modes	Original mode
1	APS/AMS mode	Original mode
	Other modes	Transfer sheet mode
2	All modes	Transfer sheet mode
3	ADF/ platen APS/AMS mode	Original mode
	Other modes	Transfer sheet mode

[32] Whole image selection for bypass and universal tray.

This setting selects whole image for bypass and universal trays. Maximum size (A3/11×17) exposure is conducted for 2nd and subsequent sheets also.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P71.	Copy quantity setting button
3	Select the data. 0: Whole image is not available. 1: Whole image is available for bypass tray only. 2: Whole image is available for universal tray only. 3: Whole image is available both bypass and universal trays.	Copy quantity setting button
4	Press the copy button.	

[33] Master key code setting

This setting specifies master key code.

Step	Operation (Indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P72 to P79 in order.	Copy quantity setting button
3	Enter the master key code. (Setting range: 0 to 9)	Copy quantity setting button
4	Press the copy button.	

[34] Internal Heater Setting

Existence of the internal heater is set.

Step	Operation (indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P81.	Copy quantity setting button.
3	Select the data. 0: Not installed 1: Installed	Copy quantity setting button
4	Press the copy button.	

[35] LCT Paper Size Selection

This is to select the paper size for LCT.

Step	Operation (indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P82.	Copy quantity setting button.
3	Select the data. Europe USA 0 : (A3) (11×17) 1 : (B4) (8.5×14) 2 : A4R 8.5×11R 3 : B5R 8.5×11 4 : A4 (5.5×8.5) 5 : B5 6 : (A5) 7 : (F4) **Note:** Sizes in ( ) are not available.	Copy quantity setting button
4	Press the copy button.	

[36] Switching the Size Selection/Cassette Selection

This is to set either the size selection or the cassette selection.

Step	Operation (indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P83.	Copy quantity setting button
3	Select the data. 0: Size selection 1: Cassette selection	Copy quantity setting button
4	Press the copy button.	

[37] Immediate Stop Mode Setting

This setting selects whether or not stopping the machine immediately when 300 copies have been made without supplying toner after the toner supply LED has blinked.

Step	Operation (indication)	Entry terminal
1	Enter the 25 mode.	
2	Specify address P92.	Copy quantity setting button
3	Select the data. 0: Enable 1: Disable	Copy quantity setting buttons
4	Press the copy button.	

[38] 25 Mode Address Map

Address	Item	Setting range	Initial value	Change details	Remarks
00					
01					
02					
03					
04					
05					
06					
07					
08					
09					
10	Auto start original selection	0-2	0		Refer to [2]
11	Counter selection (P+1)	0, 1	0	0 : Total count 1 : Copy (developing) count	
12					
13	Copy quantity setting limit selection	0-9	0	0: Max. 1: 1 2: 3 3: 5 4: 9 5: 10 6: 20 7: 30 8: 50 9: 99	
14	Message language selection	0-4	0	0: English 1: French 2: German 3: Italian 4: Spanish	
15	A size mode selection	0, 1	0	0: Normal 1: A size priority	
16	Preferential paper size selection	0-9	1: Europe 2: USA		Refer to [6]
17					
18	Original turn back selection	0-1	0	0: None 1: Turn back	Refer to [7]
19	Auto Low power mode time setting	0-4 : Europe 1-5 : Other than Europe	0: Europe 4: USA	0: None 1: 2 min. 2: 5 min. 3: 10 min. 4: 15 min. 5: 30 min.	0: Only for Europe 5: Other than Europe only
20	Auto shut off mode selection	0-1	0: USA 1: Europe	0: Used 1: Not used	
21	Auto start release time	0-3	1	0: 10 sec. 1: 20 sec. 2: 30 sec. 3: Not released	
22					
23					
24					
25	Copy control protection area 1	0, 2	0	0: Protected 2: Not protected	
26	ADF frame erase selection	0, 5	0: Europe 5: USA	0 : None 5 : 5mm frame	
27	10^4 PM cycle specification	0-9	4		
28	10^3		5		
29					
30					
31			0		
32	10^5 PM count	0-9	0		
33	10^4		0		
34	10^3		0		
35	10^2		0		
36	10^1		0		
37	10^0		0		

Address	Item	Setting range	Initial value	Change details	Remarks
38					
39	10^5 Drum count	0-9	0		
40	10^4		0		
41	10^3		0		
42	10^2		0		
43	10^1		0		
44	10^0		0		
45	Minimum original size detection selection	0-2	0		Refer to [13]
46	Sorter initial mode setting	0-3	0	0 : Non-sorter mode priority 1 : Sort priority 2 : Group priority 3 : Sort/Staple priority	
47	Clearing fixing failures	0-9	0	0 : Cancel 1-9 : Fault	
48	Auto reset setting	0-1	1	0 : No auto reset 1 : Auto reset (Europe 90 sec., USA 120 sec.)	
49	Clearing current leakage/ main relay failure	0-2	0	0 : Cancel 1 : Current leakage fault 2 : Main relay fault	
50	Double count specification for A3 copies	0, 1	0	0: 1 count 1: 2 counts	
51	Initial tray selection (when canceling APS)	0-5	0	0: Tray 1 1: Tray2 2: Tray3 3: Tray4 4: Tray5 (Japan only) 5: Bypass tray	
52	Copy control protection area 2	0, 8	0	0: Protected 8: Not protected	
53	Auto tray switch	0-1	0	0 : Non select 1 : Select	
54	Auto start button function selection	0, 2	2		Refer to [21]
55	Energy Star initial mode selection	0-3	0	0: 1→1mode 1: 1→2 mode 2: 2→1 mode 3: 2→2 mode	
56	Auto button function selection	0-9	0		Refer to [23]
57	Key counter operation specification	0,5	0	0 : Stop after the paper for the ongoing copy operation has exited. 5 : Stop immediately.	
58	Initial mode setting	0-7	0		Refer to [25]
59	AMS mode priority selection	0-3	0		Refer to [26]
60	User's bias shift selection	0-3	0	0 : L0 1 : L1 2 : L2 3 : L3	Refer to [27]
61	Mixed original function setup	0-1	0	0: Not selected 1: Selected	
62	Auto shut off timer setting	0-3	1	0 : 30 min. 1 : 60 min. 2 : 90min. 3 : 120 min.	
63	Odd number of original count mode selection	0-1	0	0: Not used 1: Used	

Address	Item	Setting range	Initial value	Change details	Remarks
64	10^5 Total count	0-9	0		
65	10^4		0		
66	10^3		0		
67	10^2		0		
68	10^1		0		
69	10^0		0		
70	Priority of original/transfer sheet selection	0-3	1		Refer to [31]
71	Whole image selection for bypass and universal trays	0-3	0		Refer to [32]
72	Master key code (upper digit)		0		
73	Master key code		0		
74	Master key code		0		
75	Master key code		0		
76	Master key code		0		
77	Master key code		0		
78	Master key code		0		
79	Master key code (lower digit)		0		
80					
81	Internal heater setting	0-1	1	0 : Internal heater not installed 1 : Internal heater install	
82	LCT paper size selection	2-6: Europe 2,3: USA	4: Europe 3: USA		Refer to [35]
83	Switching the size selection/ cassette selection	0-1	0	0 : Size selection 1: Cassette selection	
84					
85	10^5 Copy (developing) count	0-9	0		
86	10^4		0		
87	10^3		0		
88	10^2		0		
89	10^1		0		
90	10^0		0		
91					
92	Immediate stop mode setting (Caution code P25)	0-1	0	0 : Enable 1 : Disable	
93	KRDS host password setting				
94	KRDS time/date setting				
95	KRDS telephone number setting				
96	KRDS serial number setting				
97					
98	KRDS memory switch setting				
99					

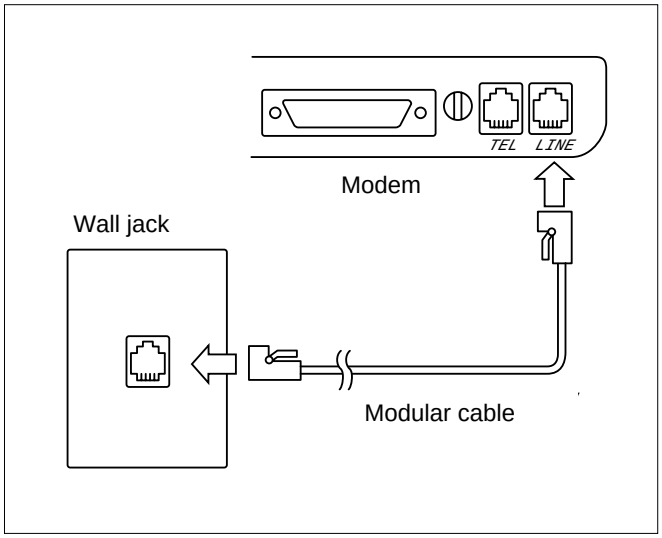
[39] Setup for KRDS

1. KRSD Setting Items

Set the KRDS using the following procedure.

Step	Operation
1	Connect the power supply cable of the main body to an outlet.
2	Turn OFF the main switches of the main body and modem. Connect the main body and modem with the modem cable. Connect the modem and modular jack with the modular cable (*1).
3	Initialize the KRDS memory (approximately 1 minute). (47 mode→15P98P→copy button ON) (Initialization is completed when the indication changes from “OUTPUT” to “INPUT”.)
4	Setting the memory switch for KRDS (25 mode → “4. Setting KRDS memory switch”) (Modem and dial mode selection) Select the modem with KRDS software switch No. 1 - bit No. 0 - 6. Select the dial mode with KRDS software switch No.1 - bit No. 7.
5	Setting the current time (25 mode → 5. Setting the time) (*2)
6	Setting the host password (25 mode → 6. Entering the host password) (*3) (*4)
7	Setting the main body serial No. (25 mode → “7. Entering and confirming the serial number) (*5)
8	Setting the KRDS telephone number (25 mode → 8. Setting the telephone numbers) (*6)
9	Turn ON the modem.
10	Confirming setup (47 mode → 9. Calling the host for completion of setup) Modem communication will start. Completion of setup will be displayed.

*1 : Refer to the instruction manual of the modem for modular cable connection.

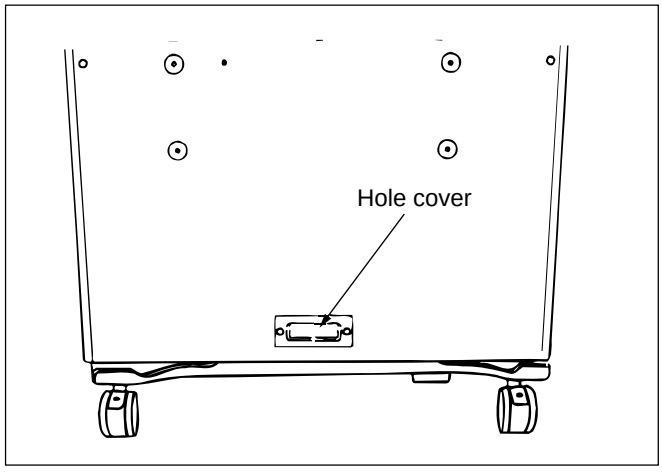


*2 : Japanese time is set at the factory.
*3 : Be sure to set the host password using 5 digits.
*4 : Always enter the host password 1.
*5 : Always enter the main body serial number.
*6 : Always set the telephone No. 1 of copy side and of host side to both copy machine and host computer.

2. Connecting the modem

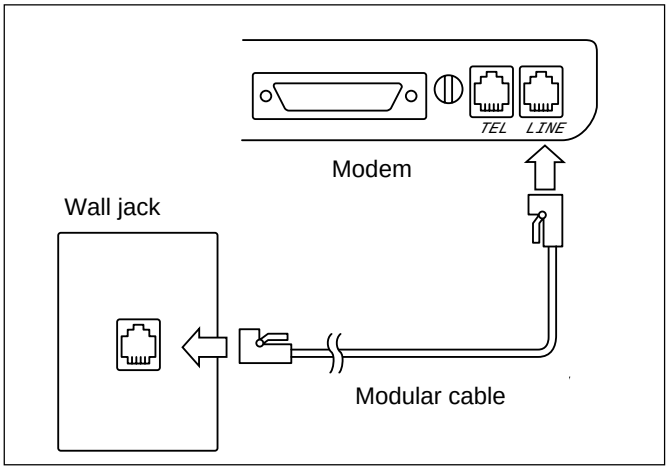
Caution: Modem power to be switched off.

(1) Cut out the hole cover for KRDS modem cable connection provided on the rear plate of DB.



(2) Reinstall the rear plate of DB.
(3) Connect the modem cable between the copier and the modem.
(4) Connect the modular cable between the modem and the wall jack,

Note: For modular conneciton, see the instruction manual of the modem concerned.



3. Initializing KRDS memory

(1) Insert the power plug of copier into the plug socket (with the power switched off).

(2) While pressing numeric keypad [4] and [7] simultaneously, switch on the power.

(3) Press numeric keypad and [P] button in the order of [1][5][P][9][8][P], and press COPY button.

(4) The message display will change to the INPUT display about 1 minute later.

I/O CHECK MODE INPUT : 15

(5) Switch off the power of main body.

4. Setting KRDS memory switch

(Setting the modem and the telephone line type)

(1) While pressing numeric keypad [2] and [5] simultaneously, switch on the power.

(2) Press numeric keypad and [P] button in the order of [P][9][8][P].

DIP-SW SET MODE 01 - 0 : 1, 0 01

Address # Bit # Present # New # ✻

The ✻ expresses the byte data of the address as a hexadecimal number.

(3) Set the modem and the telephone line type.
Specifying address No. 01, enter the data of modem and telephone line type at bits 0 to 7 in reference to the following tables. Specify the address number by DENSITY button, and bit numbers by ENLARGE/REDUCE button.

<If telephone line is “Pulse”>

Modem \ Bit No.	7	6	5	4	3	2	1	0	✻
Sportster 2400 (US Robotics)	0	0	0	0	0	0	0	1	01
PM 2400SA (Practical Peripherals)	0	0	0	0	0	0	1	0	02
Delta Plus (CPV)	0	0	0	0	0	0	1	1	03
Micro Link 2410T2 (ELSA)	0	0	0	0	0	1	0	0	04
MD 96FB5V(OMRON)	0	0	0	0	0	1	0	1	05

<If telephone line type is “Tone”>

Modem \ Bit No.	7	6	5	4	3	2	1	0	✻
Sportster 2400 (US Robotics)	1	0	0	0	0	0	0	1	81
PM 2400SA (Practical Perpherals)	1	0	0	0	0	0	1	0	82
Delta Plus (CPV)	1	0	0	0	0	0	1	1	83
Micro Link 2410T2 (ELSA)	1	0	0	0	0	1	0	0	84
MD 96FB5V(OMRON)	1	0	0	0	0	1	0	1	85

Example: For setting Delta Plus (CPV) as modem and Pulse as telephone line type:
Enter 00000011 respectively at bit numbers 7 to 0.
03 will be displayed as ✻ value.
Check in reference to the above tables, whether the ✻ value corresponds to the modem to be set.

(4) Press STOP/CLEAR button and [P] button simultaneously.

5. Setting the time

(1) Press numeric keypad and P button in the order of [P][9][4][P]. Then press COPY button.

(2) Press PAPER SIZE button to select Mode 1 (for setting the present time).

SET MODE 1 93 /3 /15 /3 /30 /TUE

Mode	Description
1	Present time setting
2	Specified date & time to transmit
3	Regular transmission interval according to time
4	Regular transmission interval according to copy count

(3) Press COPY button for selecting the data item in the order of Year, Month, Day, Hours, Minutes and Day of Week, and enter the data for each item using numeric keypad. The entered data will be established whenever COPY button is pressed.

Press COPY button
↓
SET MODE 1*
92 YEAR
↓
Press COPY button
↓
SET MODE 1*
10 MONTH
↓
Press COPY button
↓
SET MODE 1*
11 DAY
↓
Press COPY button
↓
SET MODE 1*
12 HOUR
↓
Press COPY button
↓
SET MODE 1*
13 MINUTE
↓
Pewss COPY button
↓
SET MODE 1*
FRI WEEK

1=Mon 2=Tue 3=Wed 4=Thu
5=Fri 6=Sat 7=Sun

↓
Press COPY button
↓
SET MODE 1
92 /10 /11 /12 /13 /FRI

* Since Mode 2, Mode 3 and Mode 4 can be set in the copier from the host computer, CE is not required to set them at the time of installation. If CE sets them, refer to [Reference] below.

[Reference]

(1) How to set Mode 2 (Specified date & time to transmit)

1) Press PAPER SIZE button, to select Mode 2.

SET MODE 2 92 /10 /11-12

2) Press COPY button, for selecting the data item in the order of Year, Month, Day and Hours, and enter the data for each item, using numeric keypad. The entered data will be established whenever the copy button is pressed.

Press COPY button
↓
SET MODE 2*
92 YEAR
↓
Press COPY button
↓
SET MODE 2*
10 MONTH
↓
Press COPY button
↓

SET MODE 2*
11 DAY

↓

Press COPY button

↓

SET MODE 2*
12 HOUR

↓

Press COPY button

↓

SET MODE 2*
92/10/11-12

(2) How to set Mode 3 (Regular transmission interval according to time)

1) Press PAPER SIZE button, to select Mode 3.

SET MODE 3
31***10: 11 MONDAY

2) Select the period mode, using a copy quantity setting button (1; monthly mode 2; weekly mode 3; daily mode), and establish it by pressing COPY button.

(when 1: monthly mode has been selected)
Press COPY button, for selecting the data item in the order of Day, Hours and Minutes, and enter the data for each item, using numeric keypad. The entered data will be established whenever COPY button is pressed.

SET MODE 3M*
31 DAY

↓

Press COPY button

↓

SET MODE 3M*
10 HOUR

↓

Press COPY button

↓

SET MODE 3M*
11 MINUTE

↓

Press COPY button

↓

SET MODE 3M*
31***10: 11MONDAY

(When 2:weekly mode has been selected)
Press COPY button. for selecting the data item in the ordder of DAY of Week, Hours and Minutes, and enter the data for each item, using numeric keypad. The entered data will be established whenever COPY button is pressed.

SET MODE 3W*
FRI WEEK

1=Mon 2=Tue 3=Wed 4=Thu
5=Fri 6=Sat 7=Sun

↓

Press COPY button

↓

SET MODE 3W*
10 HOUR

↓

Press COPY button

↓

SET MODE 3W*
11 MINUTE

↓

Press COPY button

↓

SET MODE 3W*
** FRI 10; 11 WEEKLY

(When 3: daily mode has been selected)
Press COPY button, for selecting the data item in the order of Hours and Minutes, and enter the data for each item, using numeric keypad. The entered data will be established whenever COPY button is pressed.

SET MODE 3D*
10 HOUR

↓

Press COPY button

↓

SET MODE 3D*
11 MINUTE

↓

Press COPY button

↓

SET MODE 3
....10:11 DAILY

(3) How to set Mode 4 (Regular transmission interval according to copy count)

1) Press PAPER SIZE button, to select Mode 4.

SET MODE 4 1 2 3 4 5 6

2) Press COPY button, and enter data, using copy quantity buttons.

SET MODE 4* 7 8 9 0 1 2

3) Press COPY button, for establishing the entered data.

(4) Press STOP/CLEAR button and [P] button simultaneously.

6. Entering the host password

(1) Press numeric keypad and [P] button in the order of [P][9][3][P].

(2) Press Zoom up/down button to select No. 1.

1	Host password (First proposal)
2	Host password (Second proposal)
3	Spare
4	Spare

No setting is required for Nos. 3 to 4 since they are spare.

(3) Enter password in 5 digits by pressing numeric keypad and [P] button (see the following code table).

Code table

Key entry	Set value	Key entry	Set value	Key entry	Set value
0	0	P10P	A	P30P	U
1	1	P11P	B	P31P	V
2	2	P12P	C	P32P	W
3	3	P13P	D	P33P	X
4	4	P14P	E	P34P	Y
5	5	P15P	F	P35P	Z
6	6	P16P	G		
7	7	P17P	H		
8	8	P18P	I		
9	9	P19P	J		
P00P	0	P20P	K		
P01P	1	P21P	L		
P02P	2	P22P	M		
P03P	3	P23P	N		
P04P	4	P24P	O		
P05P	5	P25P	P		
P06P	6	P26P	Q		
P07P	7	P27P	R		
P08P	8	P28P	S		
P09P	9	P29P	T		

Example:

KRDS 1

P → 2 0 → P → P → 2 7 → P → P → 1 3 → P → P → 2 8 → P → 1

PASSWORD SET KRDS 1

(4) Press COPY button.

(5) Press STOP/CLEAR button and [P] button simultaneously.

7. Entering and confirming the serial number

(1) Press numeric keypad and [P] button in the order of [P][9][6][P].

SERIAL NO. ********* ROM VERS. **, **, **

Then, press COPY button.

(2) Press PAPER SIZE button, for selecting the serial number input mode.

SERIAL NO. SET MODE ********

(3) Enter the serial number (in 9 digits) using numeric keypad and [P] button.(See the code table referred to for host password.)

SERIAL NO. SET MODE 1 1 1 1 1 1 1 1 1

(4) Press COPY button, to establish the data.

(5) Press STOP/CLEAR button and [P] button simultaneously.

8. Setting the telephone numbers

(1) Press numeric keypad and [P] button in the order of [P][9][5][P].

<For setting the telephone number of host>

1) Press MAGNIFICATION button to select Tel No. 1 (host first telephone No.).

2) Enter the telephone number by pressing numeric keypad (if a wrong number is entered, press AUTO/RESET button).

TELEPHONE NO. 0 1 2 3 4 5 6 7

*Upt to 20 digits can be set.

[Reference]

Special kyes:

PAPER SIZE button [-] (hyphen)

COPY MODE button [,] (pause)

COPY DENSITY button ▲ [T]

▼ [P]

Sorter key [W]

3) Press COPY button to establish the data.
4) Press Zoom up/down button to select Tel No.2.
5) Enter the second host telephone No. as same as Tel No. 1.

<For setting the telephone number of copier>

1) Press Zoom up/down button to select Tel No. 3.
2) Enter the telephone number, using numeric keypad. (Entering procedure is the same as the above for entering the telephone number of host.)

* No setting is required for the telephone number 4, since this mode is spare.

Caution:

this telephone number is for direct communication with the copier at user. Therefore, if the telephone number includes an extension number, if may not be able to be set.

(4) Switch off the power of main body.

9. Calling the host for completion of setup

(1) Switch on the power of modem.

(2) While pressing copy quantity buttons [4] and [7] simultaneously, switch on the power (47mode).

(3) Press numeric keypad and [P] button in the order of [1][5][P][9][5][P].
Modem communication will start.

PLEASE WAIT --COMMUNICATING NOW

(4) Modem communication will end.
~Completion of setup~

I/O CHECK MODE INPUT : 15

(5) Switch off the power of main body.

Caution:

If completion of setup is not displayed yet more than 10 minutes later, confirm the host telephone number, connection with cable, etc., and redo the operation from step 1.

10. KRDS Software Dipswitch Table

: Initial balue set

No.		Function	MSB	Bit Pattern						LSB	Description	Initial Value (Hexadecimal)
byte	bit		7	6	5	4	3	2	1	0		
1	0~6	Modem selection		0	0	0	0	0	0	0	No setting (nothing is sent to the modem)	01
				0	0	0	0	0	0	1	Sportster 2400 (US Robotics)	
				0	0	0	0	0	1	0	PM2400SA (Practical Perpherals)	
				0	0	0	0	0	1	1	Delta Plus (CPV)	
				0	0	0	0	1	0	0	Micro Link2410T2 (ELSA)	
				0	0	0	0	1	0	1	MD96FB5V (Omron) /PV-AF24V5 (Aiwa)	
				1	1	1	1	1	1	1	Manual setting (values set in byte 3 to 24 are sent to the modem)	
	7	Dial mode	0								Pulse dial	
			1								Tone dial	
2	0	Data character length								0	7 bit	41
										1	8 bit	
	1~2	Parity and stop bit						0	0		No parity, stop bit 1	
								0	1		Even number parity, stop bit 1	
								1	0		Odd number parity, stop bit 1	
								1	1		No parity, stop bit 2	
	3	Program					NF					
	4~6	Baud rate		0	0	1						
				0	0	1					300 bps	
				0	1	1					1200bps	
				1	0	0					2400bps	
				1	0	1					4800bps	
				1	1	0					9600bps	
	7	Program	NF									
3	0	Local echo								0	No setting	D7
										1	E0	
	1	Result code							0		No setting	
									1		Q0 : exists	
	2	Result code form						0			No setting	
								1			V1 : Word	
	3	DCD signal operation setting					0				No setting	
							1				&C1: Only ON when detecting carrier	
	4~5	DSR signal operation setting			0	0					No setting	
					0	1					&S0: Normally ON	
					1	0					&S1: ON while on-line	
					1	1					&S2	
	6	DSR signal check		0							OFF	
				1							ON	
	7	DCD signal check	0								OFF	
			1								ON	

KRDS Software Dipswitch Table (Continued)

: Initial value set

No. byte	No. bit	Function	MSB 7	6	5	4	3	2	1	LSB 0	Description	Initial Value (Hexadecimal)
4	0~1	DSR signal operation setting							0	0	No setting	10
									0	1	&D0	
									1	0	&D1	
									1	1	&D2	
	2~3	Speaker control					0	0			No setting	
							0	1			M0: Normally OFF	
							1	0			M1: ON until transmission starts	
							1	1			M2	
	4~6	Detection of speed indication and dial tone/ busy tone when connection is complete		0	0	0					No setting	
				0	0	1					X0: No transmit speed indication	
				0	1	0					X1: Transmit speed indication	
				0	1	1					X2: Transmit speed indication, dial tone detection	
				1	0	0					X3: Transmit speed indication, busy tone detection	
				1	0	1					X4: Transmit speed indication, dial tone and busy tone detection	
				1	1	0					non: none	
				1	1	1					non: none	
	7	Modem reset (factory set)	0								No setting	
			1								&F: Factory set	
5	0~7	Flow control (ASCII data) command free setting									Send ASCII data specified in this area to the modem	00
6	0~7											
7	0~7											
8	0~7	Error correction V.42 (ASCII data) command free setting										
9	0~7											
10	0~7											
11	0~7	Data compression V.42bis (ASCII data) command free setting										
12	0~7											
13	0~7											
14	0~7	Other (ASC II data) command free setting										
15	0~7											
16	0~7											
17	0	Set S register (bit 0 to 7)								0	No setting	01
		S0: Automatic receive ring count								1	S0=: Data effective	
	1	S6: Time between off hook and dial start							0		No setting	
									1		S6=: Data effective	
	2	S7: Off hook limit timer						0			No setting	
								1			S7=: Data effective	
	3	S8: Dial stop time(seconds)					0				No setting	
							1				S8=: Data effective	
	4	S9: Carrier recognition time				0					No setting	
						1					S9=: Data effective	
	5	S10: Allowable carrier stop time			0						No setting	
					1						S10=: Data effective	
	6	S11		0							No setting	
				1							S11=: Data effective	
	7	Program	NF									

KRDS Software Dipswitch Table (Continued)

: Initial value set

No. byte	No. bit	Function	MSB 7	6	5	4	3	2	1	LSB 0	Description	Initial Value (Hexadecimal)
18		S0 Data	00~FFH								01H (1)	01
19		S6 Data	00~FFH								02H (2)	02
20		S7 Data	00~FFH								1DH (29)	1D
21		S8 Data	00~FFH								02H (2)	02
22		S9 Data	00~FFH								06H (6)	06
23		S10 Data	00~FFH								0EH (14)	0E
24		S11 Data	00~FFH								5FH (95)	5F
25		Timer 1	00~FFH								20H (32)x1sec	20
26		Timer 2	00~FFH								40H (64)x1sec	40
27		Timer 3	00~FFH								0AH (10)x100msec	0A
28		Timer 4	00~FFH								20H (32)x100msec	20
29		Timer 5	00~FFH								FFH (255)x1sec	FF
30		Retry data, timer 6	00~FFH								FFH (255)x5msec	FF
31	0	Call for SC abnormality generation								0	Disable	FF
										1	Enable	
	1	Call for date specification date							0		disable	
									1		Enable	
	2	Call for parts exchange date						0			Disable	
								1			Enable	
	3	Call for drum replace date					0				Disable	
							1				Enable	
	4	Call for regular service				0					Disable	
						1					Enable	
	5				0						Disable	
					1						Enable	
	6	Regular transmission call		0							Disable	
				1							Enable	
	7	Regular transmission selection (time, count)	0								Time: fixed time	
			1								Counter: fixed count	
32	0	Call when changed to option construction								0	Disable	07
										1	Enable	
	1	Toner supply call							0		Disable	
									1		Enable	
	2	Frequent jam call						0			Disable	
								1			Enable	
	3~7	Program	NF									
33	0	Set up flag								0	Not yet	12
										1	Finished	
	1~2	Redial interval						0	0		1 minute	
								0	1		3 minutes	
								1	0		5 minutes	
								1	1		7 minutes	
	3~4	Redial count				0	0				0	
						0	1				5	
						1	0				10	
						1	1				∞:No limit	
	5~6	Program	NF									
	7	Line feed control (when initializing modem)	0								CR/LF: LF	
			1								CR: No LF	

KRDS Software Dipswitch Table (Continued)

[ ] :Initial value set

No. byte	No. bit	Function	MSB 7	6	5	4	3	2	1	LSB 0	Descriptions	Initial Value (Hexadecimal)
34	0~1	Effective copy quantity for frequent jam call in main body							0	0	Copy quantity: 3000	00
									0	1	Copy quantity: 6000	
									1	0	Copy quantity: 9000	
									1	1	Copy quantity: 12000	
	2~3	Effective original feed quantity for frequent jam call in ADF					0	0			Original feed quantity: 600	
							0	1			Original feed quantity: 1200	
							1	0			Original feed quantity: 1800	
							1	1			Original feed quantity: 2400	
	4~5	MCBJ setting for frequent jam call in main body			0	0					MCBJ: 500	
					0	1					MCBJ: 1000	
					1	0					MCBJ: 2000	
					1	1					MCBJ: 3000	
	6~7	MOBJ setting for frequent jam call in ADF	0	0							MOBJ: 100	
			0	1							MOBJ: 200	
			1	0							MOBJ: 400	
			1	1							MOBJ: 600	
39	0	Memory data error FJ0								0	Copy enable	00
										1	Copy disable	
	1	Communication error between copy machine and KRDS FJ1							0		Copy enable	
									1		Copy disable	
	2	RS-232C line error PJ2						0			Copy enable	
								1			Copy disable	
	3	Modem AT command error FJ3					0				Copy enable	
							1				Copy disable	
	4	Communication error between host and KRDS FJ4				0					Copy enable	
						1					Copy disable	
	5	For copy stop PJ5			0						Copy enable	
					1						Copy disable	
	6~7	Program	NF									
40	0	Force copy stop control								0	Copy enable	00
										1	Stop	
	1	Data reset after servicing frequent jam call							0		Not reset	
									1		Reset (returns to 0 automatically.)	
	2~7	Program	NF									

11. Signal name and pin arrengement

Pin No.	Signal code	Signal direction KRDS HOST	Signal name	Description
1	GND	⟷	Frame ground	Ground of chassis or cable shield
2	TxD	→	Transmission data	Transmission sirial data
3	RxD	←	Reception data	Reception serial data
4	RTS	→	Transmission request	DTE requests transmission from DCE.
5	CTS	←	Transmission available	DCE can transmit.
6	DSR	←	Data set ready	DCE is operable.
7	GND	⟷	Signal ground	Ground for signals
8	DCD	←	Data channel reception carrier detection	DCE is under reception of carrier.
9				
10				
11				
12				
13				
14		Not used		
15				
16				
17				
18				
19				
20	DTR	→	Data terminal ready	DTE is ready for transmission and reception
21				
22				
23		Not used		
24				
25				

47 MODE

[1] Setting the 47 Mode

This model is equipped with I/O check function as self-diagnostics that can be activated in 47 mode.
It is possible to check the status of each sensor and to confirm and adjust each load.

1. Setting Procedures

(1) Turn the main switch OFF.
(2) While pressing the numerical keys 4 and 7 of the copy quantity setting button, turn the main switch ON. This will enable the 47 Mode.

Note: Both 4 and 7 keys must be held for more than 1 second after the main switch has been turned ON.

(3) To check input signals
  (a) Using the copy quantity setting buttons, enter the code for the desired signal (sensors, etc.). For code, refer to the I/O check code list.
  (b) The magnification indicator displays the level of the signal being checked, Hi or Lo.

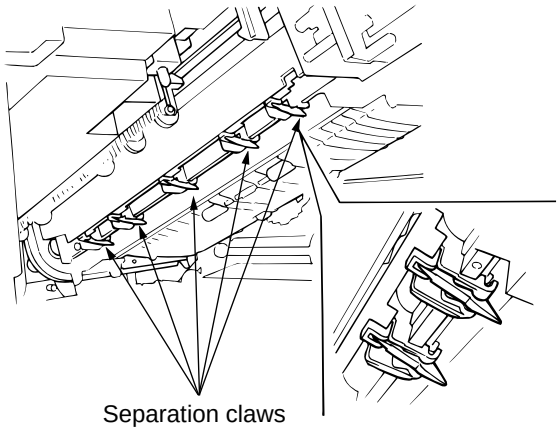
Note: Hi or Lo indicate the signal level applied to the CB (control board).

(4) To check output loads
  (a) Using the copy quantity setting buttons, enter the code for the desired output (load, etc.). For code, refer to the I/O check code list.
  (b) Press the copy button.
  This operation will activate a load or output a signal.

Copy button	Code	Description
Before pressing	Input	Input signal level indication
After pressing	Output	Output load operation/signal

(5) Press the stop/clear button to disable the output.
(6) Turn the main switch OFF to cancel the 47 Mode.

[2] Checking Separation Claw Clearance



1. Tools required

- Paper (1mm thickness)
- Door switch jig

2. Preparations

(1) Turn the main switch OFF.
(2) Open the front door, then pull up the main body separating lever to open the upper body.
(3) Insert and hold the door switch jig into the slot of the front upper main body to activate interlock switch.

3. Adjustment procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 47 Mode.	
2	Enter code 29.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	Check clearance between the drum and separation claws. Drum and separation claw clearance (standard): 0 mm	
5	Press the stop/clear button.	Stop/clear button
6	Check clearance between the drum and separation claws, using a paper. Standard: 0 < Drum and separation claw clearance ≦ 1 mm	

[3] Adjusting L Detection (Toner Density)

Always perform this adjustment when replacing developer with new one so that the voltage corresponding to toner density is written on the memory.

Note: This adjustment resets copy counter.

1. Preparations

(1) Supply new developer evenly into the developing unit.

Note: When unpacking the machine, supply developer, then perform the L detection before supplying toner.
If this adjustment is performed with used developer, incorrect adjustment can be performed since the machine judges it as a standard one.

2. Adjustment procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 47 Mode.	
2	Enter code 51.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	"51" will blink for approx. 90 seconds. It changes to be lit, when toner density has been automatically adjusted.	

[4] AE Adjustment

1. Tools required

- AE adjustment chart

2. Preparations

(1) Place the AE adjustment chart on the original glass.

Note: During adjustment, the original cover must be closed.

3. Adjustment procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 47 Mode.	
2	Enter code 98.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	The exposure lamp comes on, then scanning operation scans once. When the scanning operation is stopped and the exposure lamp goes off, the center copy density indicator comes on, then AE adjustment is completed (See Note below).	

Note: If error code F88 is displayed, the AE sensor must be replaced since it might be abnormal.

[5] Input/Output Check List

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
CVR		CVR ACK signal	Normal	Abnormal	00	L1		Exposure lamp
TLD		Toner level detection signal	Yes	No	01			Toner supply motor
		Internal temperature sensor	Depends on the condition of the machine		02			Charging
					03		◯	Transfer (*)
					04		◯	Separation (*)
					05			
					06			
					07			
					08			
					09			
					10			
					11			Developing bias (dark-40V)
					12			Developing bias (normal-150V)
					13			Developing bias (light-280V)
					14			
SSB1		Paper size signal (Main Body/Upper)	See *1		15		◯	KRDS
SSB2		Paper size signal (Main Body /Lower)			16			
PFUB		Paper size signal (DBU/Upper)			17			
SSB121		Paper size signal (DBU/Middle, LCT)			18			
SSB122		Paper size signal (DBU/Lower)			19			
PS1		Paper feed sensor (Upper)	Yes	No	20	SD1		Paper feed solenoid (Upper)
PS3		Pre-shutter sensor signal	Yes	No	21	SD2		Paper feed solenoid (Lower)
PS8		Exit detecting sensor signal	Yes	No	22			Paper feed solenoid (DBU /Upper)/LCT motor
PS111		Paper feed sensor (LCT)			23			Paper feed solenoid (DBU/Middle)
PS2		Paper feed sensor (Lower)	Yes	No	24	SD4		Bypass feed solenoid
PS121		Paper feed sensor (DBU/Upper)/ LCT upper limit sensor	Yes	No	25	SD3		Resist solenoid
PS122		Paper feed sensor (DBU/Middle)			26	SD123		Paper feed solenoid (DBU/Lower/LCT)
PS123		Paper feed sensor (DBU/Lower)/ LCT sensor			27			
					28			LCT1 solenoid
		LCT connection signal	Yes	No	29	SD5		Separation claw solenoid
PS4		Optics home position sensor signal	Yes	No	30			
					31	M2		Optics drive motor
PS7		Optics lens home position sensor signal	Yes	No	32			
					33			
					34			
PS112		Paper feed sensor (PFU)/ LCT1 paper feed sensor	Yes	No	35	SD6		Internal radiation shutter

(*) Don't turn ON without connecting the dummy resistance.

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
PS113		Paper conveyance sensor (PFU)/ LCT1 paper conveyance sensor	Yes	No	36			
					37			
					38			
					39			
					40	M1		Main motor
					41	M6		Drum drive motor
					42	M4		Cooling fan motor
					43	C(T)		Total counter
C(K)		Key counter connection signal	Yes	No	44			
					45	L2		Fixing heater lamp
					46			
					47			
					48	OB		Operation board(all light)
					49	CEL		CEL (all light)
					50			
					51			L detection adjustment
					52			
					53			
					54			
					55			L detection control data (default)
					56			
					57			
					58			L detection control data (Upon completion of L detection adjustment)
					59			L detection control data (current)
PS304		ADF interlock	OFF	ON	60	M301		ADF motor rotation (CCW)
		Changeover section interlock	Yes	No	61	M301		ADF motor reverse rotation (CW)
		ADF no paper sensor	Yes	No	62			
		ADF paper size sensor	Yes	No	63			
					64			ADF original feed solenoid
PS306		ADF original exit sensor signal	Yes	No	65	SD301		ADF gate solenoid
					66			
					67			ADF paper feed clutch
					68		◯	ADF speed reduction exit solenoid
					69			ADF running mode
					70			
					71			
					72			

Input signal source			Indication and signal source		Code	Output load/signal		
Sym-bol	Multi-mode	Name	Hi	Lo		Sym-bol	Multi-mode	Name
					73			
					74			
					75			
					76			
					77			
					78			
		Sorter connection signal	Yes	No	79			
MS101		ADU front door interlock switch	Open	Close	80	M101		ADU drive motor rotation (CW)
PS109		ADU paper home position sensor	Yes	No	81	M101		ADU drive motor rotation (CCW)
PS103		ADU paper feed sensor	Yes	No	82	SD103		ADU gate solenoid
PS1010		ADU no paper detection sensor	Yes	No	83	M101		ADU drive motor 1 turn (CW)
PS101		ADU paper conveyance 1 sensor	Yes	No	84	M101		ADU drive motor 1 turn (CCW)
PS104		ADU paper conveyance 2 sensor	Yes	No	85	SD101		ADU reverse solenoid
PS105		ADU paper conveyance 3 sensor	Yes	No	86	SD102		ADU drive solenoid
PS106		ADU cam sensor	No	Hp	87			
PS107		ADU roller sensor	No	Hp	88			
PS102		ADU paper exit sensor	Yes	No	89			
					90			PM count clear
					91			Drum count clear
					92			Memory initial set *2
					93			
					94			
					95			
					96			
					97			
					98	AE		AE automatic adjustment mode
					99			

*1: Indications for each paper size

Paper size	Indication
A3	4
A4	6
A4R	5
B4	0
B5	2
B5R	1
B6R	3
Universal	E
No tray	F
"8.5 × 14"	A
"8.5 × 11"	7
"8.5 × 11R"	d

<Multi-mode list>

Code	Multi-mode No.	Description
15	94	Service engineer call
		Setup call
	98	KRDS memory initialization
03	01	Normal mode output
	02	Back-side mode
04	01	Normal mode output
	02	Back-side mode
69	01	ADF test mode
	02	RA-DF test mode

*2: Note-that all memorized data (include adjustment data) are reset when memory initial set is executed.

36 MODE

A special operating mode called the “36 Mode” has been provided exclusively for making adjustments while operating various parts of the machine.

[1] Setting Procedures

(1) Turn the main switch OFF.
(2) While holding the 3 and 6 keys of the copy quantity setting buttons, turn the main switch ON. This will enable the 36 Mode. The 36 Mode is exclusively for making adjustments therefore, does not support normal copy operation. The letters “CC” will appear in the copy quantity indicator.
(3) Enter the desired code using the copy quantity setting buttons.
(4) Press the copy button.
“01” will appear in the copy quantity indicator.
(5) While holding the P button, press the specified number for the desired adjustment using the copy quantity setting buttons.
The data now in use will be indicated on the LCD panel and also blink in the copy quantity indictor.
(6) Enter new data using the copy quantity setting buttons.
(7) Press the P button.
(8) Turn the main switch OFF to cancel the 36 Mode.

■ Positive and negative data entry

(1) To enter positive or negative data, press the stop/clear button. The display will alternate from positive (+) to negative (–) and negative (–) to positive (+).

Note: Since the operation method in the running test mode is different slightly from those mentioned above, follow the items of the running test mode.

[2] Running Test Mode

This mode will run the copier continuously to facilitate testing procedures.

Step	Operation(Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter the applicable running code. (See the table below.)	Copy quantity setting buttons
3	Press the copy button. This operation starts initial operation.	
4	Press the copy button, after the copier warms up. This operation starts copying.	
5	Press the stop/clear button to stop copying.	

*1 : Running code table

Code	Mode	Total count
00	×99	Does not count
01	No paper	
02	×99 + No paper	
10	×99	Counts
11	No paper	
12	×99 + No paper	

[3] Light Intensity Adjustment

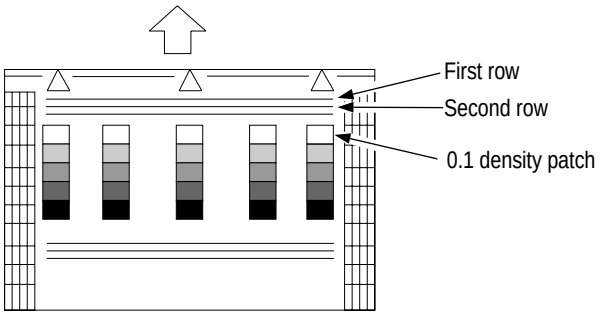
1. Preparation

Place the potential chart on the original glass.

2. Setting procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 90. Copy quantity setting buttons	
3	Press the copy button to start copying. Check density of the image.	Copy button
4	Press the P button.	P button
5	Enter new data. Valid data: 00 ← 47 → 99 (dark) (standard) (light)	Copy setting button
6	Press the P button.	P button
7	Repeat steps 3 to 6 until reading is within standard.	
8	Turn the main switch OFF.	Main switch

Standard: Adjust so that 0.1 patch on test chart is not reproduced and 2nd row is legible.



[4] Lead Edge Timing Adjustment

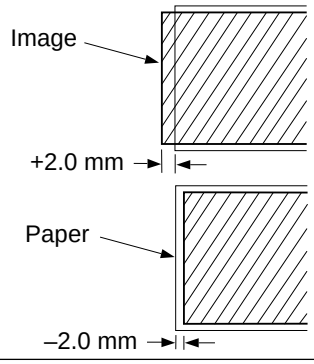
1. Preparation

Place the pyramid chart for checking lead edge timing on the original glass.

2. Setting procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 91.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	Press the magnification mode button and select magnification to be adjusted. Adjusting range: The lead edge timing adjustment can be carried out for each magnification range below. Select any magnification within the range and perform the adjustment. The adjustment data are applied all magnifications within the range (Whole shift at life sized copying). X 0.64 to X 0.5 X 0.71 to X 0.65 X 0.90 to X 0.72 X 1.10 to X 0.91 X 1.25 to X 1.11 X 1.48 to X 1.26 X 1.70 to X 1.49 X 2.00 to X 1.71	Magnification mode button
5	Press the copy button to start copying. Check lead edge timing of the image.	Copy button
6	After the quantity indicator blinks, enter new data. Valid data: –99← 00 → +99 (slow) (standard) (fast) Change per one data unit: 0.23 mm	Copy quantity setting button
7	Press the P button.	P button
8	Repeat steps 3 to 7 until reading is within standard.	
9	Turn the main switch OFF.	Main switch

Standard: Misalignment at lead edge of paper: ±2.0mm (when main body only)



[5] Vertical Magnification Adjustment

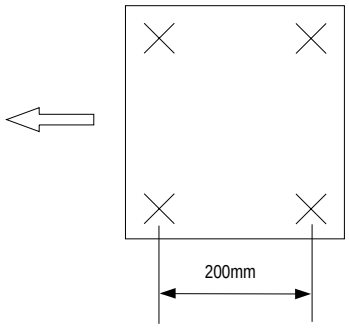
1. Preparation

Place the pyramid chart for checking vertical magnification on the original glass.

2. Setting procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 93.	Copy quantity setting buttons
3	Press the copy button to start copying. Check vertical magnification of the image.	Copy button
4	Press the P button.	P button
5	Enter new data. Valid data: –99 ← 00 → +99 (short) (standard) (long) Change per one data unit: 0.02%	Copy quantity setting button
6	Press the P button.	P button
7	Repeat steps 3 to 6 until reading is within standard.	
8	Turn the main switch OFF.	Main switch

Standard: Within ±0.3% at 1:1 ratio
Within 1mm every 200mm
(±0.5% except 1:1 ratio)



[6] Horizontal Magnification Adjustment

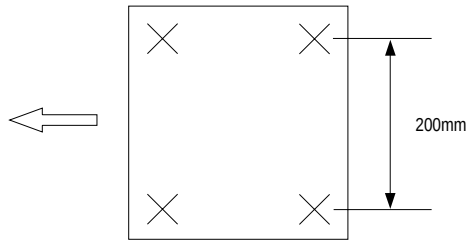
1. Preparation

Place the pyramid chart for checking horizontal magnification on the original glass.

2. Setting procedures

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 95.	Copy quantity setting buttons
3	Press the copy button to start copying. Check horizontal magnification of the image.	Copy button
4	Press the P button.	P button
5	Enter new data. Valid data: –99 ← 00 → +99 (small) (standard) (large) Change per one data unit: 0.1%	Copy quantity setting button
6	Press the P button.	P button
7	Repeat steps 3 to 6 until reading is within standard.	
8	Turn the main switch OFF.	Main switch

Standard: Within 0.5% at 1:1 ratio
Within 1mm every 200mm



[7] Lead Edge Erasure Width Adjustment

This adjustment has two procedures.

- Overall adjustment
- Desired magnification adjustment

1. Preparation

(1) Place the pyramid chart for checking lead edge erasure width on the original glass.

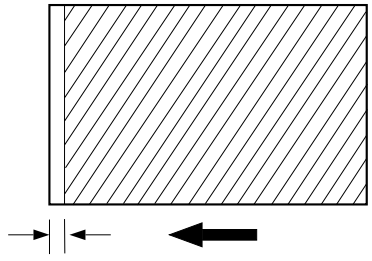
2. Overall adjustment

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 92.	Copy quantity setting buttons
3	Press the copy button to start copying. Check lead edge erasure width of the image.	Copy button
4	Press the P button.	P button
5	After the quantity indicator blinks, enter new data. Valid data: –99 ← 00 → +99 (less) (standard) (more) Change per one data unit: 0.23mm	Copy quantity setting button
6	Press the P button.	P button
7	Repeat steps 3 to 6 until reading is within standard.	
8	Turn the main switch OFF.	Main switch

3. Desired magnification adjustment

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 92.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	Press the magnification mode button and select magnification to be adjusted. Adjusting range: The lead edge erasere width adjustment can be carried out for each magnification range below. Select any magnification within the range and perform the adjustment. The adjustment data are applied all magnifications within the range. 1) ×2.00 to ×1.66, ×0.59 to ×0.5 2) ×1.65 to ×1.42, ×0.71 to ×0.60 3) ×1.41 to ×1.22, ×0.82 to ×0.72 4) ×1.21 to ×1.01, ×0.99 to ×0.83 5) 1.00	Magnification mode button
5	Press the copy button to start copying. Check lead edge erasure width of the image.	Copy button
6	Press the P button.	P button
7	After the quantity indicator blinks, enter new data. Valid data: –99 ← 00 → +99 (less) (standard) (more) Change per one data unit: 0.23mm	Copy quantity setting button
8	Press the P button.	P button
9	Repeat steps 3 to 7 until reading is within standard.	
10	Turn the main switch OFF.	Main switch

Standard: Lead edge erasure width
3.0mm or less



Erasure width

[8] Trailing Edge Erasure Width Adjustment

1. Preparation

(1) Place the pyramid chart for checking trailing edge erasure width on the original glass.

2. Adjustment

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 96.	Copy quantity setting buttons
3	Press the copy button to start copying. Check trailing edge erasure width of the image.	Copy button
4	Press the P button.	P button
5	After the quantity indicator blinks, enter new data. Valid data: –99 ← 00 → +99 (less) (standard) (more) Change per one data unit: 0.23mm	Copy quantity setting button
6	Press the P button.	P button
7	Repeat steps 3 to 6 until reading is within standard.	
8	Turn the main switch OFF.	Main switch

[9] Hp to Original Lead Edge Distance Adjustment

This adjustment corrects error of exposure start position due to magnification. (This adjustment is unnecessary in the field.)

1. Preparation

(1) Place the pyramid chart on the original glass.

2. Adjustment

Step	Operation (Indication)	Entry terminal
1	Enter the 36 Mode.	
2	Enter code 97.	Copy quantity setting buttons
3	Press the copy button.	Copy button
4	Make three copies with reduction of × 0.5. Measure erasure widths of them and find the mean width (A) of max. and min. <Example> If widths are 2.0 mm, 2.2 mm and 2.6 mm, A = 2.0 mm + 2.6 mm / 2 = 2.3 mm.	P button
5	Make a copy with magnification of × 2.0 and measure erasure width (B). <Example> B = 1.8 mm	
6	Find a required correction step value with the following formula. Step value = (A - B) / 0.34 <Example> (2.3 - 1.8) / 0.34 = 0.5 ≒ 1	
7	Press the P button.	P button
8	Add correction step value to the present value and enter new value. <Example> If the present value is 05, and correction step value is 1, enter new value of 06.	
9	Make a copy with magnification of × 2.0, measure the erasure width and make sure it is same as A.	
10	Repeat steps 3 thru 9 until there is no difference between A and B.	
11	Turn OFF the main switch.	Main switch

Primary Precautions to be Observed During Maintenance

1. Before troubleshooting a particular problem, consult the operator to obtain clues that may assist in finding the problem. Who would be more familiar with the symptom of the problem than the individual that constantly operates the machine.

2. Copy Samples
   Always make copy samples before and after your maintenance service to ensure proper machine operation.

3. Drum
   - Do not expose the drum to sunlight or room light. When the drum is removed from the machine, place a cover over it.
   - When cleaning the photosensitive surface, use a cleaning pad moistened with the specified drum cleaner.
     Never use solvents other than the drum cleaner; otherwise the photosensitive material of the drum can be dissolved.

4. After maintenance is completed, remember to reset the PM counter. (47 mode, Code 90/See the adjustment section for details.)

5. Always reset the drum counter when replacing the drum. (47 mode, Code 91/See the adjustment section for details.)

⚠ **Caution**
Be sure to turn the main switch OFF and pull the plug before working on the machine.

SERVICE SCHEDULE

[1] Service Schedule

Classification		Service items (Cycles) / Copy Q'ty (Unit: 1,000)	Guarantee period (5 years or 600,000 cps) 0 45 90 135 180 225 270 315 360 405 450 495 540 585	Number of cycle
Main body		Maintenance (Every 45,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
		Periodic check(I) (Every 90,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ●	6 times
ADF	DF-204	Maintenance (Every 45,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
		Periodic check(I) (Every 180,000 cps)	● ● ●	3 times
	DF-308	Maintenance (Every 45,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
		Periodic check(I) (Every 180,000 cps)	● ● ●	3 times
DBU	DB-607	Maintenance (Every 45,000 cpc)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
	DB-307	Maintenance (Every 45,000 cpc)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
		Periodic check (I) (Every 90,000 cpc)	● ● ● ● ● ● ● ● ● ● ● ● ●	6 times
	DB-107	Periodic check(I) (Every 90,000 cpc)	● ● ● ● ● ● ● ● ● ● ● ● ●	6 times
STR	ST-103	Maintenance (Every 45,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
	ST-104	Maintenance (Every 45,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ● ●	13 times
		Periodic check(I) (Every 90,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ●	6 times
	ST-216	Periodic check(I) (Every 90,000 cps)	● ● ● ● ● ● ● ● ● ● ● ● ●	6 times
		Periodic check(II) (Every 450,000 cps)	●	1 time

[2] Maintenance Items

1. Main body (Every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Preparation	Image check		○				
		Kit contents check		○				
2	Drum unit	Drum cartridge		○				
		Cleaning blade (25HA-213*)				○		Setting powder
		Separation claw (include separation claw position change)	○	○				Drum cleaner/Cleaning pad
		PCL	○					Blower brush/Cleaning pad
		CEL	○					Blower brush/Cleaning pad
		Charging corona unit (wire)	○					Cleaner knob/Blower brush
		Second paper feed driven roller	○					Blower brush/Cleaning pad
		Third paper feed driven roller	○					Blower brush/Cleaning pad
		Toner supply unit	○					Blower brush/Cleaning pad
3	Conveyance section	Transfer/Separation corona unit	○					Blower brush/Cleaning pad
		Paper conveyance guide plate	○					Blower brush/Cleaning pad
		Paper conveyance section (upper section)	○					Blower brush/Cleaning pad
4	Developing section	Developer				○		
		Developing unit		○				
		Toner density sensor	○					Blower brush
		Around the unit	○					Blower brush/Cleaning pad
5	Paper feed section	Paper feed roller (Upper/Lower)	○					Towel/Blower brush
		Paper drive roller (Upper/Lower)	○					Towel/Blower brush
		Paper driven roller (Upper/Lower)	○					Towel/Blower brush
		Bypass roller	○					Towel/Blower brush
		Sensor (PS1)	○					Blower brush
		Paper feed guide plate	○					Blower brush/Cleaning pad

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
6	Optics section	Exposure lamp	○					Blower brush/Cleaning pad
		Reflection mirrors(main and aux.)	○					Blower brush/Cleaning pad
		Lens	○					Blower brush/Cleaning pad
		First to fourth mirrors	○					Blower brush/Cleaning pad
		AE sensor	○					Blower brush
		Photo sensors	○					Blower brush
		Optics stopper felt			○			Multi oil
		Platen glass	○					Drum cleaner/Cleaning pad
		Platen cover	○					Drum cleaner/Cleaning pad
		Ozone filter (35EA1015*)				○		
		Scale plate	○					Cleaning pad
		APS sensor	○					Blower brush
7	Fixing unit section	Upper fixing roller	○					Roller cleaner/Cleaning pad
		Lower fixing roller	○					Roller cleaner/Cleaning pad
		Paper exit roller	○					Drum cleaner/Cleaning pad
		Paper exit roller/A	○					Roller cleaner/Cleaning pad
		Fixing claw	○					Roller cleaner/Cleaning pad
		Upper fixing guide plate	○					Drum cleaner/Cleaning pad
		Cleaning roller (35EA5305*)				○		
		Fixing temperature sensor 1	○					Cleaning pad/Paper/Drum cleaner
		Fixing temperature sensor 2	○					
		Thermostat	○					Cleaning pad/Paper/Drum cleaner
		Sensor cleaning blade (2 pcs)	○					Roller cleaner/Cleaning pad
		Gears			○			Solvest 240
8	Final check	L detection adjustment (47 mode, Code 51) *1		○				Plas guard No.2
		Around the machine	○					
		W.U.T. check		○				Drum cleaner/Cleaning pad
		Image check (light distribution and intensity adjustments)		○				
		Unit external parts	○	○				
		Current leakage breaker		○				Drum cleaner/Cleaning pad
		PM counter reset (47 mode, Code 90) *2		○				
		Drum counter reset (47 mode, Code 91) *3		○				* Every 2PM (90,000 cps) or drum replacement

Note : *1 to*3 : Perform checking in this order.

2. ADF [DF-204] (every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (with enclo-sures removed)		○				
2	Paper feed section	Paper feed roller	○					Drum cleaner/Cleaning pad
		Paper feed belt	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Double feed prevention roller	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
3	Paper conveyance section	Paper conveyance belt	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
		Conveyance gear			○			Plas guard No.2
4	Reversal paper exit section	Reversal roller	○					Drum cleaner/Cleaning pad
		Paper exit roller	○					Drum cleaner/Cleaning pad
5	Final check	Around the unit (with enclosures mounted)	○					Cleaning pad
		Paper feed check		○				

3. ADF [DF-308] (every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (with enclo-sures removed)		○				
2	Paper feed section	Paper feed roller	○					Drum cleaner/Cleaning pad
		Paper feed belt	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Double feed prevention roller	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
3	Paper conveyance section	Paper conveyance belt	○					Drum cleaner/Cleaning pad
		Photo sensor	○					Blower brush
		Conveyance gear			○			Plas guard No.2
		Newtralizing brush		○				
4	Revaersal paper exit section	Reversal roller	○					Drum cleaner/Cleaning pad
		Paper exit roller	○ ○					Drum cleaner/Cleaning pad
5	Final check	Around the unit (with enclo sures mounted)						Cleaning pad
		Paper feed check		○				

4. DBU [DB-607] (Every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (with enclo-sures removed)		○				
2	Paper feed section (LCT/PFU)	Paper feed roller	○					Drum cleaner/Cleaning pad
3	Paper conveyance section (LCT/PFU)	Paper feed drive roller	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Paper conveyance side door	○					Blower brush
		Sensor	○					Blower brush
4	Final check	Paper feed check (Installing external section)		○				
		External section	○					Drum cleaner/Cleaning pad

5. DBU[DB-307] (Every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (with enclo-sures removed)		○				
2	Paper feed section (LCT/PFU)	Paper feed roller	○					Drum cleaner/Cleaning pad
3	Paper conveyance section (LCT/PFU)	Paper feed drive roller	○					Drum cleaner/Cleaning pad
		Paper feed driven roller	○					Drum cleaner/Cleaning pad
		Paper conveyance side door	○					Blower brush
		Sensor	○					Blower brush
4	Final check	Paper feed check (Installing external section)		○				
		External section	○					Drum cleaner/Cleaning pad

6. STR[ST-103] (Every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (with enclo-surews removed)		○				
2	Paper conveyance section	Conveyance belt	○	○				Cleaning pad
		Feed belt	○	○				Cleaning pad
		Gate switching gear			○			Plas guard No.2
		Conveyance roller	○					Drum cleaner/Cleaning pad
		Conveyance guide plate	○					Drum cleaner/Cleaning pad
3	Stapler unit	Paper detection sensor	○					Blower brush
		Drive in a staple position	○	○				Blower brush
4	Final check	Paper feed check (with enclosures mounted)		○				Drum cleaner/Cleaning pad
		External section	○					Drum cleaner/Cleaning pad

7. STR[ST-104] (Every 45,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (Disas-sembling of externals)		○				
2	Conveyance unit	Static brush (L,S)		○				
		Feed roller	○					Drum cleaner/Cleaning pad
		Sensor hole for paper remainder	○					Cleaning pad/Cotton pad
		Aligner	○					Cleaning pad
3	Drive unit	Tray pin slide groove		○				Plas guard No.2 /Cotton pad
		Carrier support slide groove		○				Plas guard No.2 /Cotton pad
		Inside of groove for transfer cam		○				Plas guard No.2 /Cotton pad
		Stapler slide groove		○				Plas guard No.2 /Cotton pad
		Shaft holder section		○				Multi oil /Cotton pad
		Gear section		○				Plas guard No.2 /Cotton pad
4	Final check	Paper feed check (Assembling of externals)		○				
		Externals	○					Drum cleaner/Cleaning pad

[3] Periodic Check Service Items

1. Main body

(1) Periodic check [I] (Every 90,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Drum unit	Drum				○		
2	Fixing unit	Upper fixing roller 26AA5305*				○		
		Lower fixing roller 35EA5304*				○		
3	Final check	Drum counter reset (47 mode, Code 91)		○				

2. ADF [DF-204]

(1) Periodic check [I] (Every 180,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Paper feed section	Paper feed belt 04804027*				○		
		Double feed prevention roller 19604021*				○		

3. ADF [DF-308]

(1) Periodic check [I] (Every 180,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Paper feed section	Paper feed belt 04804027*				○		
		Double feed prevention roller 19604021*				○		

4. DBU [DB-307/107]

(1) Periodic check [I] (Every 90,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	ADU	Nip roller guide (Resin section)			○			Plas guard No.2
		Bevel gears/Both ends of nip rollers (Metal section)			○			Solvest 240

5. STR [ST-104]

(1) Periodic check [I] (Every 90,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrication	Replacement	Supply	
1	Drive unit	Tray pin slide groove			○			Plas guard No.2/Cotton pad
		Carrier support slide groove			○			Plas guard No.2/Cotton pad
		Inside of groove for transfer cam			○			Plas guard No.2/Cotton pad
		Stapler slide groove			○			Plas guard No.2/Cotton pad
		Shaft holder section			○			Multi oil/Cotton pad
		Gear section			○			Plas guard No.2/Cotton pad
2	Conveyance unit	Static brush (L) 12QA1019∗				○		
		Static brush (S) 12QA4819∗				○		

6. STR [ST-216]

(1) Periodic check [I] (Every 90,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Clean-ing	Check	Lubri-cation	Re-place-ment	Sup-ply	
1	Preparation	Paper feed check (Removing external section; 12TK1203*,1204*,1205*) (Checking external section; 12TK1201*,03*,04*,05*,06*)		○				
2	Frame unit of the sorter	Light transmission type sensor (Lower) 12TK8554*	○					Blower brush
3	Tray unit of the sorter	Conveyance belt 12TK4510*	○					Drum cleaner/Cleaning pad
4	Drive unit of the sorter	Home position sensor 12TK8551*	○					Blower brush
		Upper limit sensor 12TK8551*	○					Blower brush
		Lower limit sensor 12TK8551*	○					Blower brush
		Paper feed roller (Entrance section) 12TK4507*	○					Drum cleaner/Cleaning pad
		Paper exit roller (Non-sort section) 12TK4506*	○					Drum cleaner/Cleaning pad
		Belt idler gear 12TK7701*			○			Plas guard No.2
		Gear 12TK1505*			○			Plas guard No.2
		Gear 12TK7702*			○			Plas guard No.2
		Worm gear 12TK7703*			○			Plas guard No.2
5	Guide unit of the sorter	Paper entrance sensor 12TK8553*	○					Blower brush
		Indexer roller (indexer section) 12TK1506*	○					Drum cleaner/Cleaning pad
		B-belt roller 12TK4530*	○					Drum cleaner/Cleaning pad
6	Final check	Paper feed check (Installing external section; 12TK1203*,1204*,1205*) (Checking external section; 12TK1201*,03*,04,*05*,06*)		○				
		External section	○					Drum cleaner/Cleaning pad

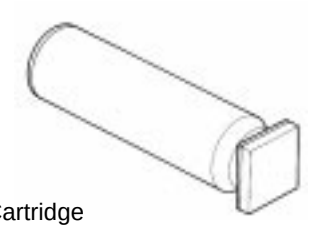
(2) Periodic check [II] (Every 450,000 copies)

No.	Classification	Service item	Implementation classification					Service material and tools
			Cleaning	Check	Lubrica-tion	Replace-ment	Supply	
1	Drive unit	Gear ass'y (inner) 12TK-156*			◯			plas guard No.2
2	Guide unit	Indexer belt roller (Right and left pins) 12TK1511*			◯			plas guard No.2

COPY MATERIALS

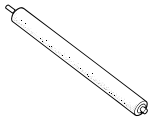
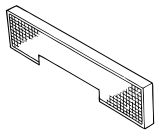
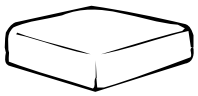
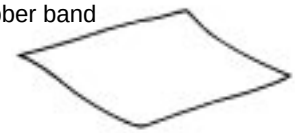
[1] Toner Kit

1. Configuration (1kit/8,000 copies)

Description	Quantity
Toner  Toner Cartridge	1pc
Dust bag 	1 pc

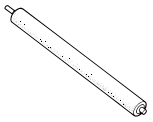
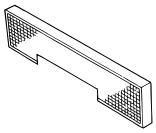
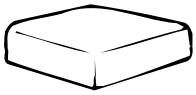
[2] PM Parts Kit

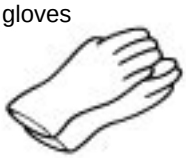
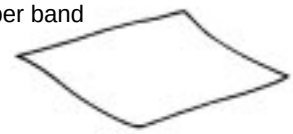
1. Configuration (1 kit/45,000 copies)

Description	Quantity
Drum cleaning blade 	1 pc
Fixing cleaning roller 	1 pc
Ozone filter 	1 pc
Cleaning pad (10pcs) 	1 pc
Polyethylene gloves 	1 set
Developer collecting sheet and rubber band 	1 pc
Dust bag and rubber band 	1 pc
Collecting hand bag 	1 pc

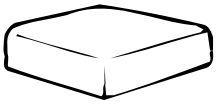
[3] Maintenance Kit

1. Configuration (1 kit/45,000 copies)

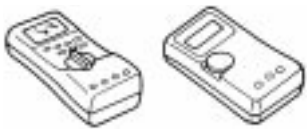
Description	Quantity
Developer 	1 pc
Drum cleaning blade 	1 pc
Fixing cleaning roller 	1 pc
Ozone filter 	1 pc
Cleaning pad (10pcs) 	1 pc

Description	Quantity
Polyethylene gloves 	1 set
Developer collecting sheet and rubber band 	1 pc
Dust bag and rubber band 	1 pc
Collecting hand bag 	1 pc

SERVICE MATERIALS

Material No.	Description	Shape	Remarks
000V-16-0	Drum cleaner		
000V-17-0	Roller cleaner		
00GR00020	Plas guard No.2		
00GR00170	Multi-oil		
00GR00210	Solvest 240		
000V-19-0	Setting powder		
000V-18-1	Cleaning pad	 1 pack	

SPECIAL TOOLS

Tool No.	Description	Shape	Quantity	Remarks
LX15-0010	Optics pulley holding jig (for replacing optics wire)		1	
25HA61651	Optics positioning plate (1)		1	
00M6-2-00	Door switch jig		1	
00V9-4-00	AE chart		1	
00VD-2002	Potential chart		1	
00VD-5000	New pyramid chart		1	
00VC-2-00	Drum cover		1	
00VD-1000	Blower brush		1	
00VE-1002 or 00VE-1003	Tester	 (00VE-1002) (00VE-1003)	1	

CONTENTS

OPTION

PRODUCT SPECIFICATIONS

[1] Type

Type: ADU None-stack type (paper conveyance/ changeover with nip rollers)
LCT Tray paper feed (front loading)
PFU Tray paper feed (front loading)

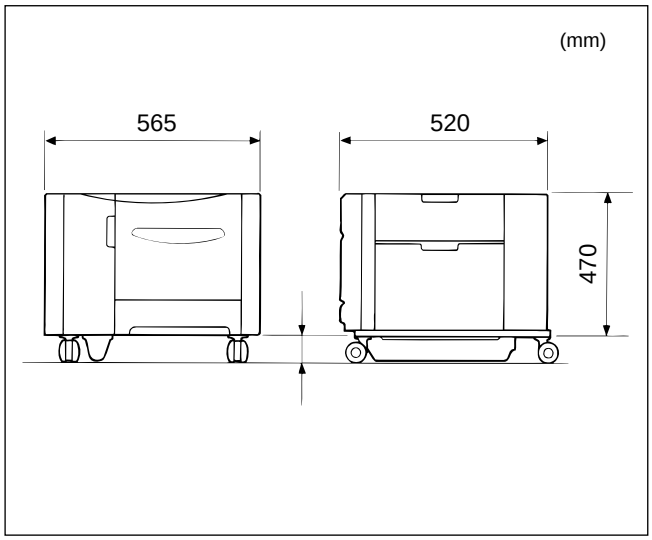
[2] Function

Paper size: ADU A3 to A5R
11×17 to 8.5×11R
LCT A4/A4R/B5/B5R/A5R
8.5×11/8.5×11R
PFU A4/A4R/B5/B5R/A5R
8.5×11/8.5×11R

Kind of paper: 60 g/m^2 to 90 g/m^2 fine quality paper
ADU capacity: 10 sheets max. (80g/m^2)
Tray capacity: LCT 1000 sheets max. (80g/m^2)
PFU 250 sheets max. (80g/m^2)

[3] Particulars of Machine

Power requirements: DC24V/5V (supplied from the main body)
Max. power consumption: 50 VA
Weight: Approx. 36 kg
Machine dimensions:



[4] Maintenance

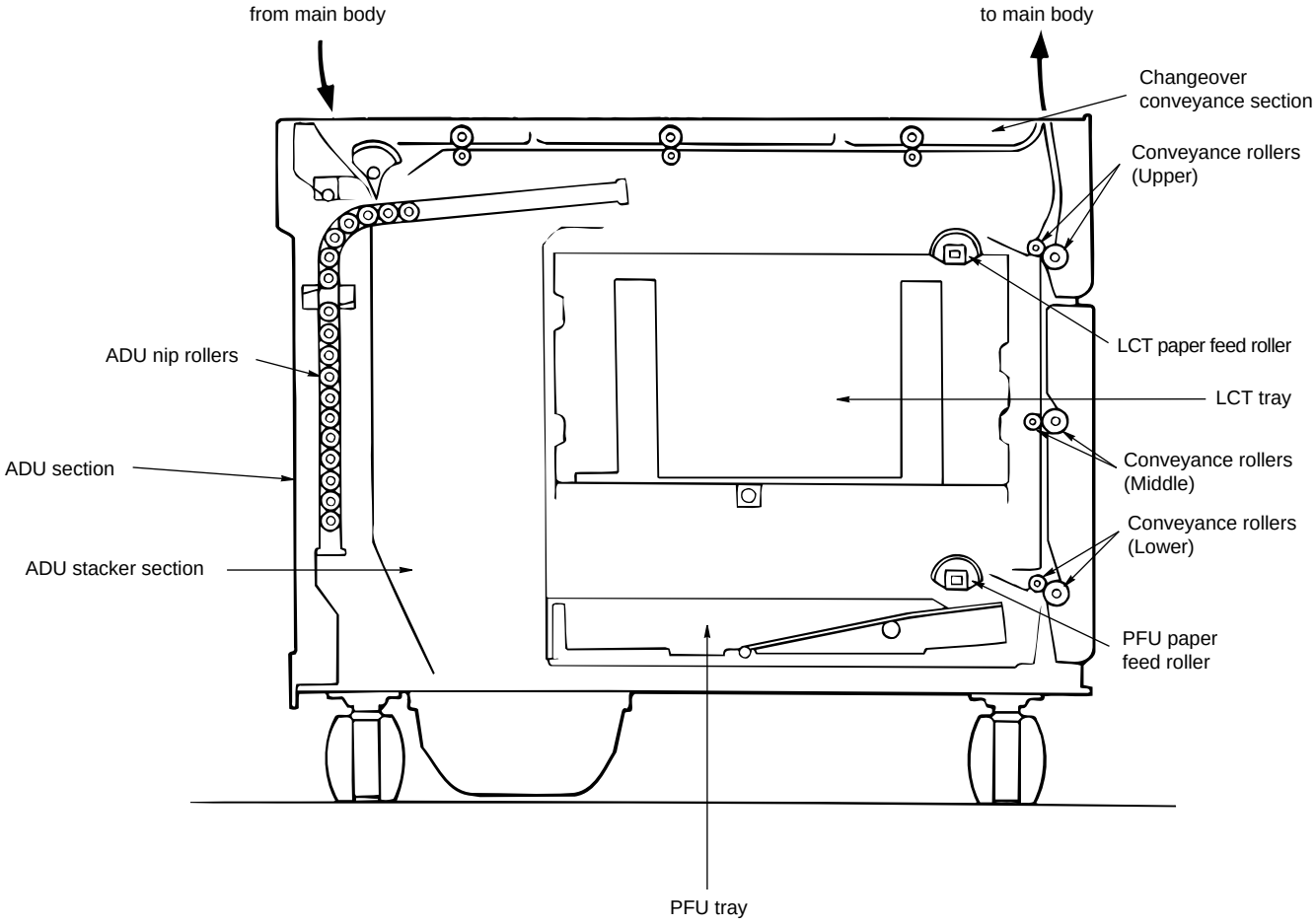
Maintenance: Same as the main unit
Service life: Same as the main unit

[5] Operating Environment

Temperature: 10˚C to 33˚C
Humidity: 20% to 80% RH

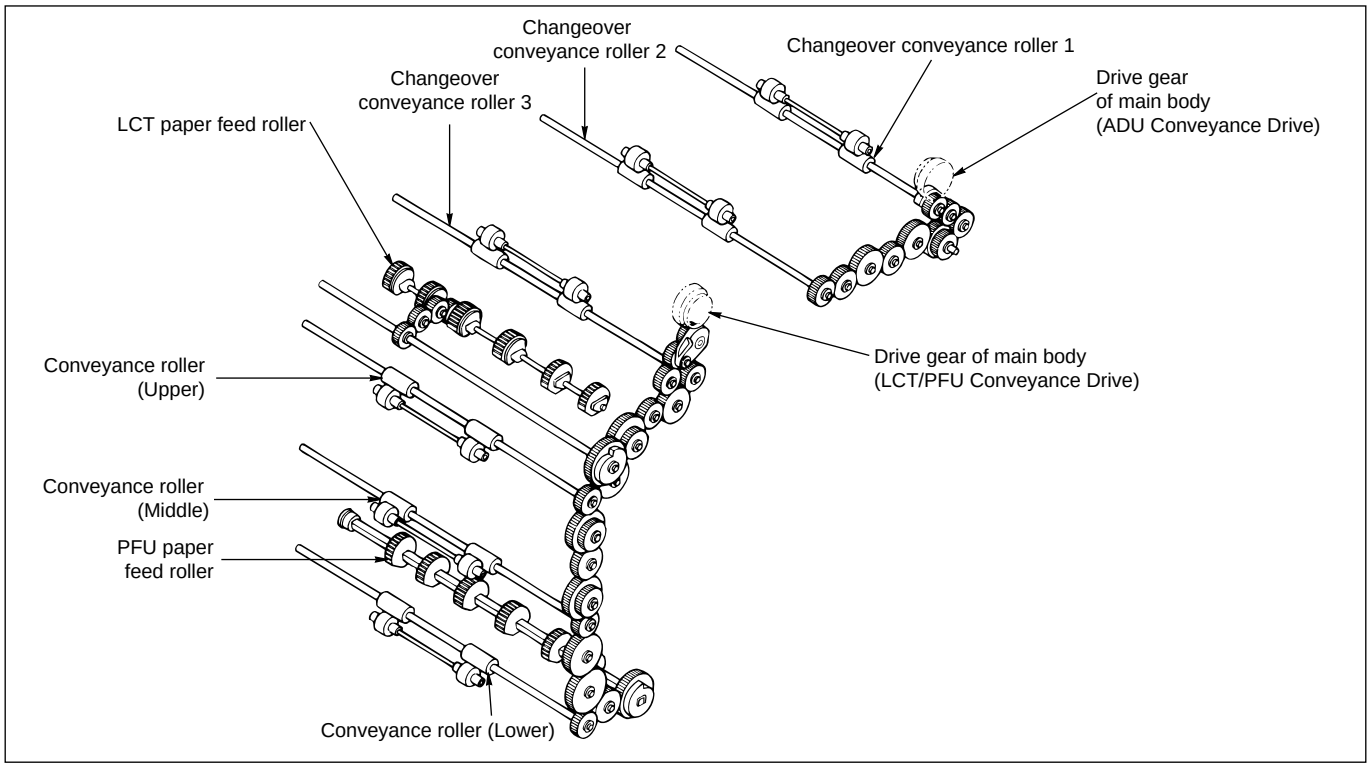
These specifications are subject to change without notice.

CENTER CROSS-SECTION

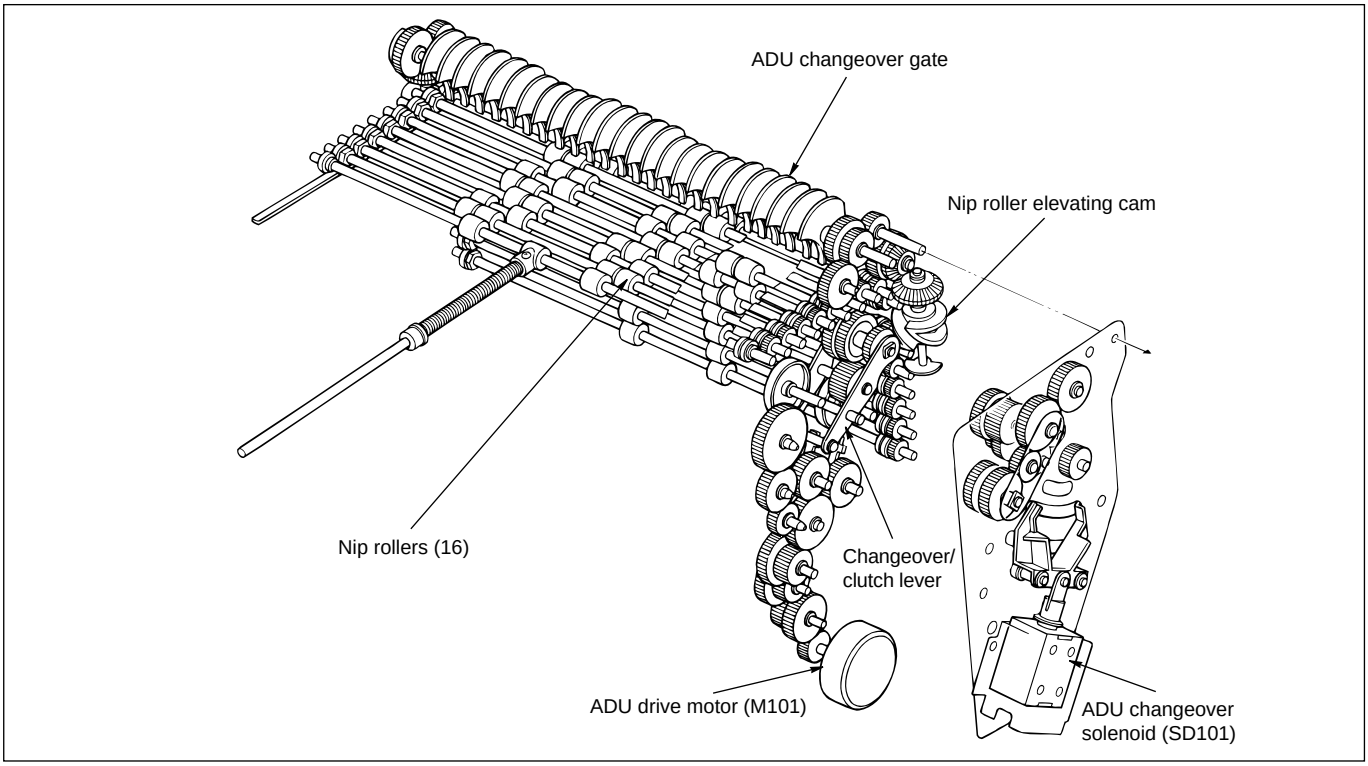


DRIVE SYSTEM SECTION

[1] Main Drive

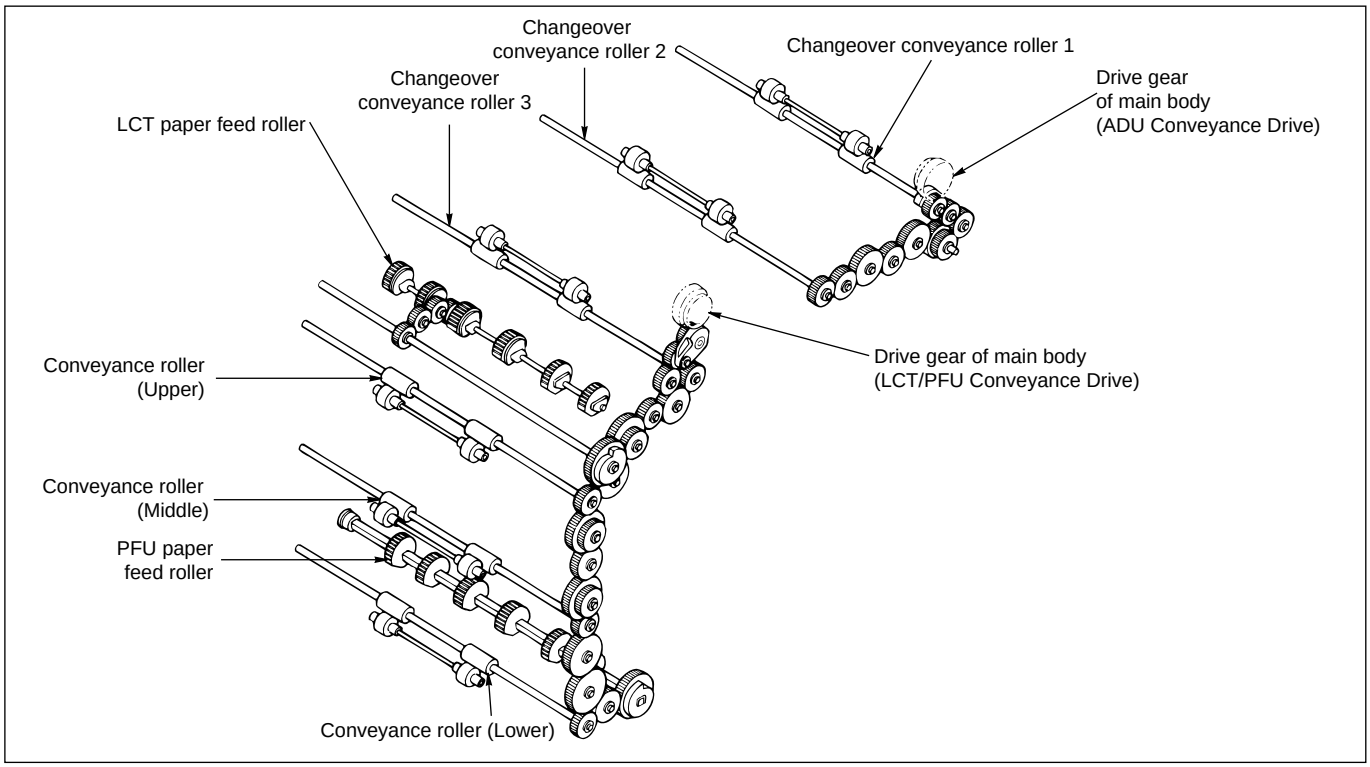


[2] ADU Nip Roller Drive



MAIN DRIVE SECTION

[1] Construction



[2] Mechanism

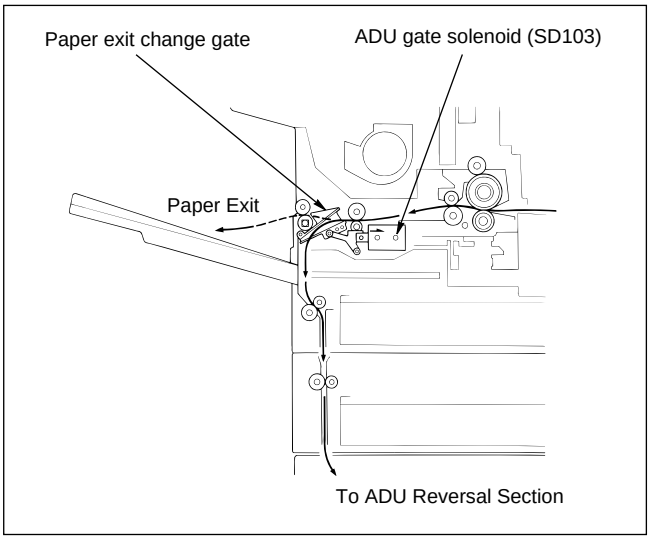
	Mechanism	Method
	LCT paper feed drive	Gear driven by main motor/ gear drive
	PFU paper feed drive	Gear driven by main motor/ gear drive
∗1	Paper route change	Paper exit change gate
	ADU changeover roller drive	Gear driven by Main motor/ gear drive

∗1. Paper route change

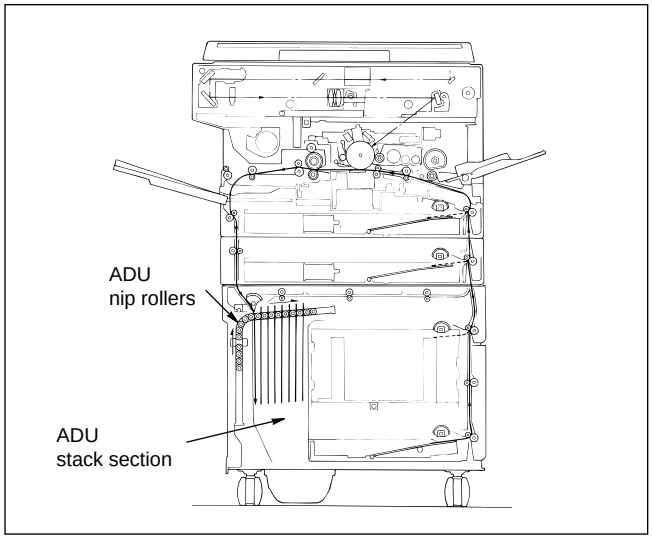
The route of a paper from the fuser section is changed by the paper exit change cover gate: one path is to cause the paper to come out of the exit, and the other is to cause the paper to go to the ADU reversal section.

In case of one-sided copying mode, paper goes to the exit, and in case of two-sided copying mode, it goes to the ADU reversal section.

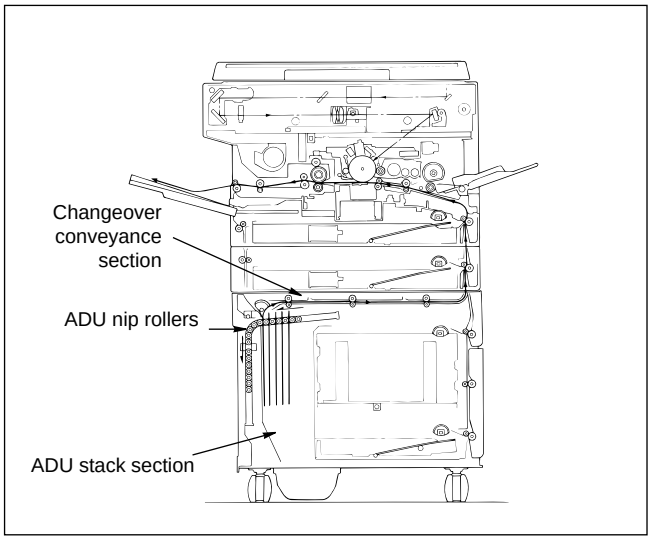
The exit paper changeover gate is controlled by turning on/ off the ADU gate solenoid (SD13).



Papers fed to the ADU are held by the nip rollers and stored in the stack section up to 10 sheets.



The paper in the stack section is fed to the changeover conveyance section by means of reverse rotation of the nip roller. The paper is entered into the normal conveyance route in the main body, then copied on the back side and finally delivered to the exit tray.



[3] Disassembly and Assembly

⚠ **Caution: Disconnect the power cable plug from the wall outlet.**

1. Removing/reinstalling the ADU Conveyance Unit (Lower)

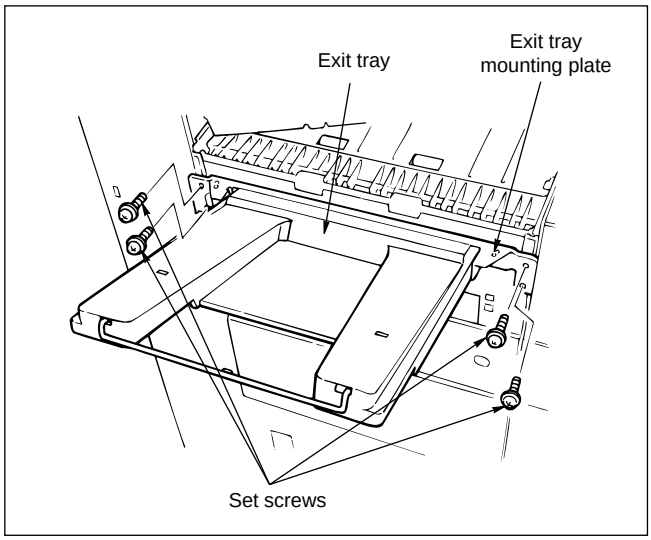
a. Procedure

(1) Open the upper main body.

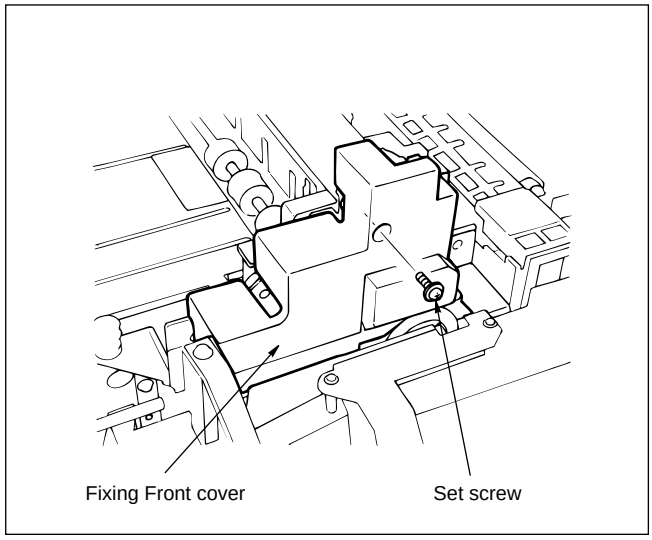
(2) Remove the four set screws, then remove the exit tray with the mounting plate.

CAUTION:

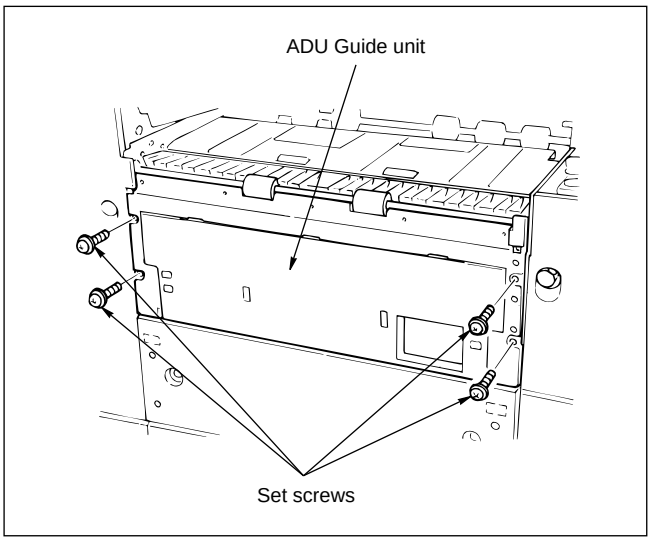
If the sorter is already installed, remove the sorter first from the main body.



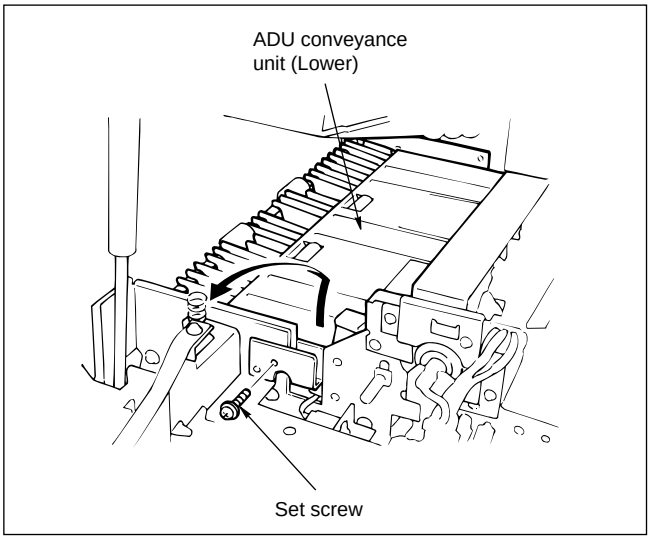
(3) Remove the set screw, then remove the fixing front cover.



(4) Remove the four set screws, then remove the ADU guide unit.



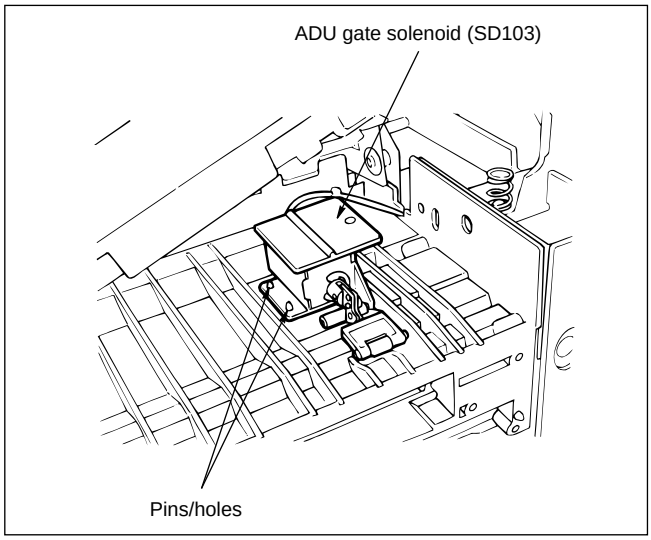
(5) Remove the set screw, then remove the ADU Conveyance unit (Lower).



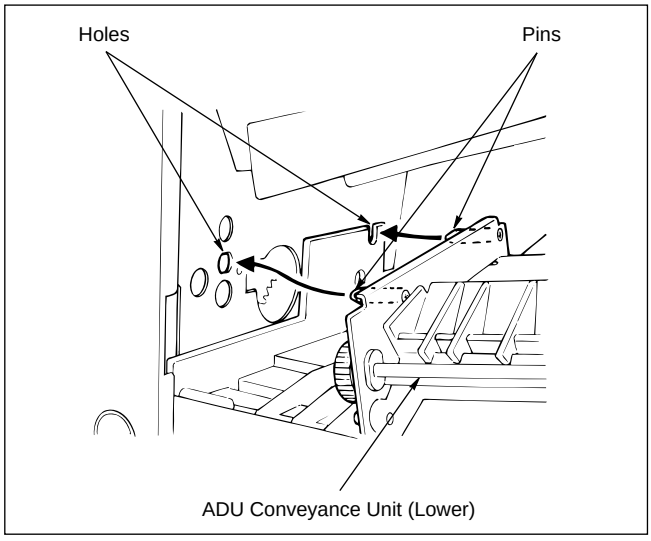
(6) Reinstall the guide in the reverse order of removal, but the following should be carefully executed.

Note:

1. Make sure the holes in the ADU gate solenoid (SD103) are aligned with the two locating pins.



2. Align the two pins on the back of the ADU Conveyance unit (Lower) with the holes in the main body.



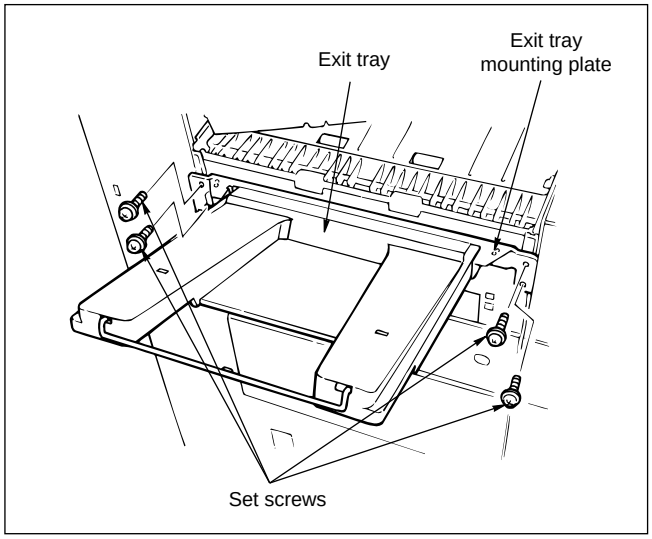
2. Removing/reinstalling the ADU conveyance guide (Upper)

a. Procedure

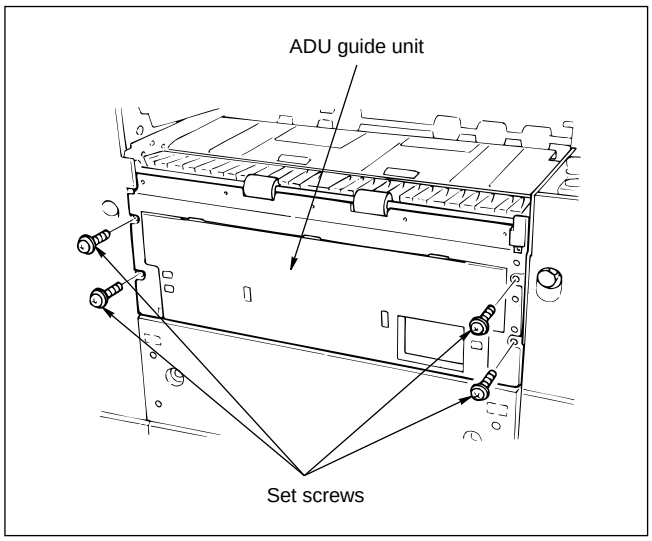
(1) Open the upper main body.

(2) Remove the four set screws, then remove the Exit disk mounting plate and the exit tray.

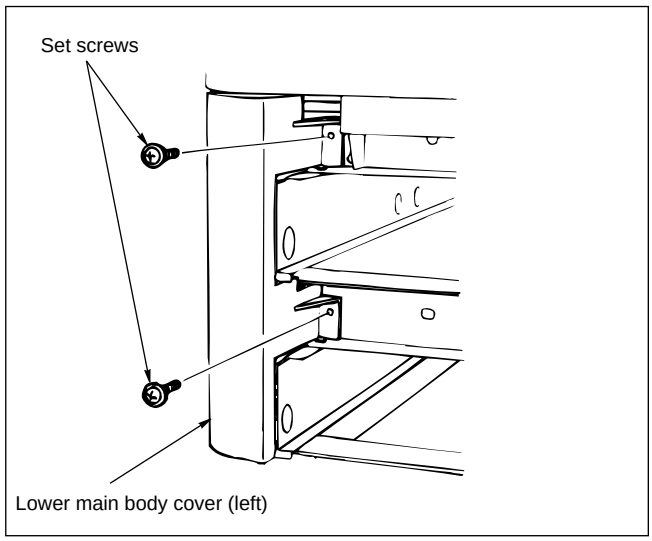
CAUTION: Machine with the sorter:
Release the sorter from the main body .



(3) Remove the four set screws, then remove the ADU guide unit.

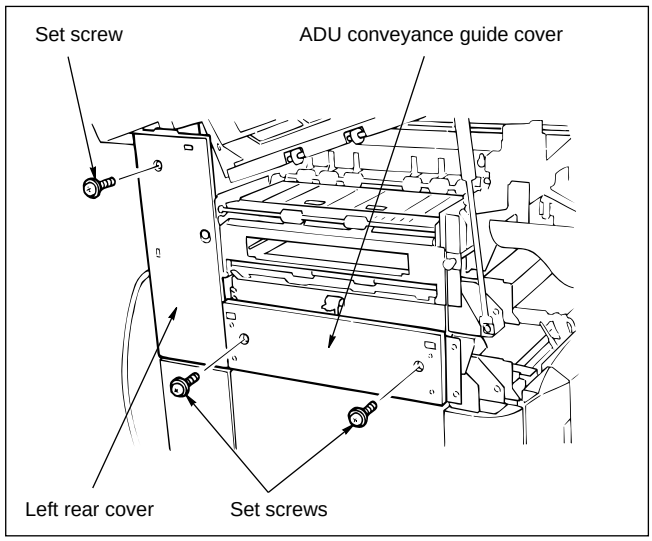


(4) Remove the main body tray, two set screws, and the lower main body cover (left).

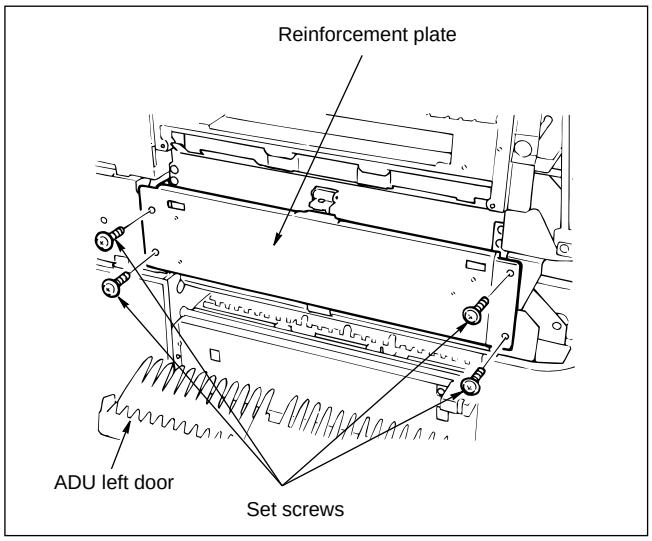


(5) Remove the set screw, and the left rear cover, sliding it to downward to clear the protruding part.

(6) Remove the two set screws, then remove the ADU conveyance guide cover.



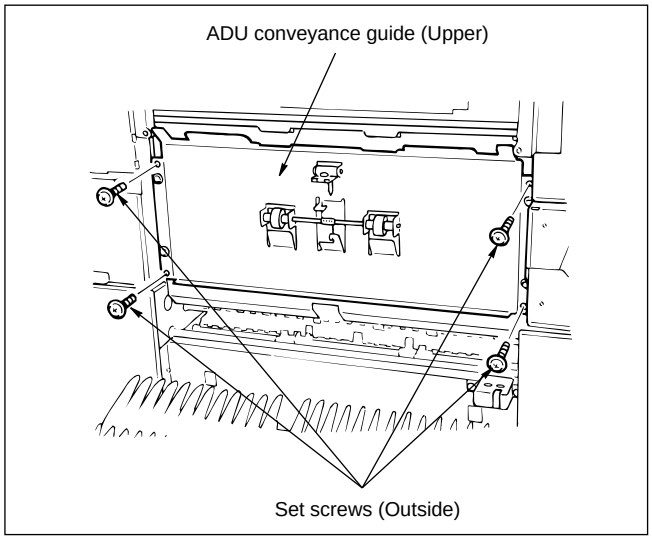
(7) Open the ADU left door, and remove the four set screws, then remove the reinforcement plate.



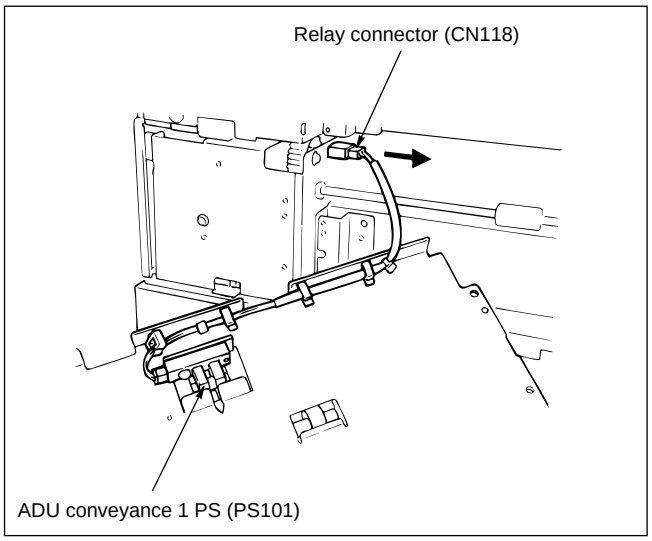
(8) Remove the four set screws, then remove the ADU conveyance guide (Upper) toward the front.

CAUTION:

When removing the ADU conveyance guide (Upper), remove all outside set screws.



(9) Disconnect the relay connector (CN118) for the ADU conveyance 1 PS (PS101), then remove the ADU conveyance guide (Upper).

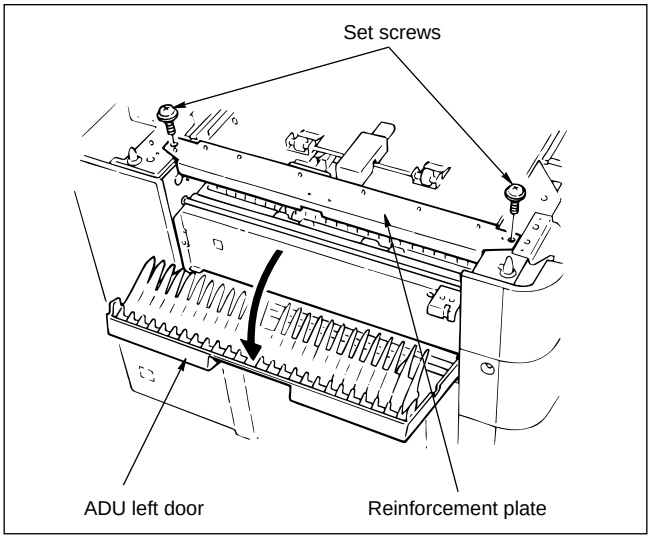


(10) Reinstall the ADU conveyance guide (upper) in the reverse order of removal.

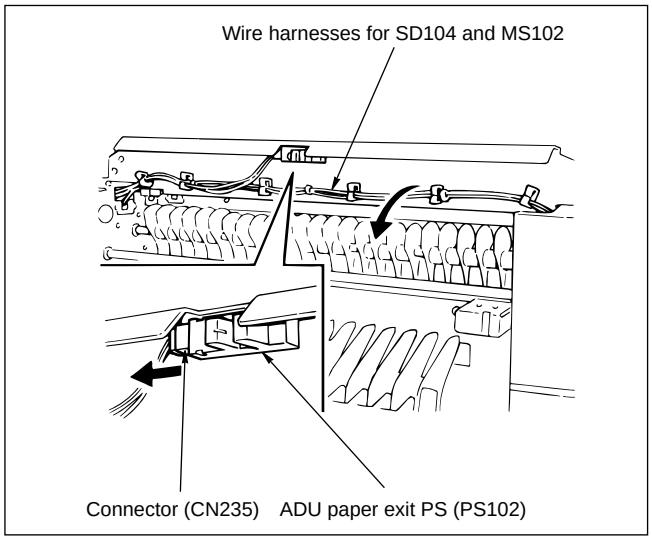
3. Removing/reinstalling the ADU changeover conveyance guides (1 to 4)

a. Procedure

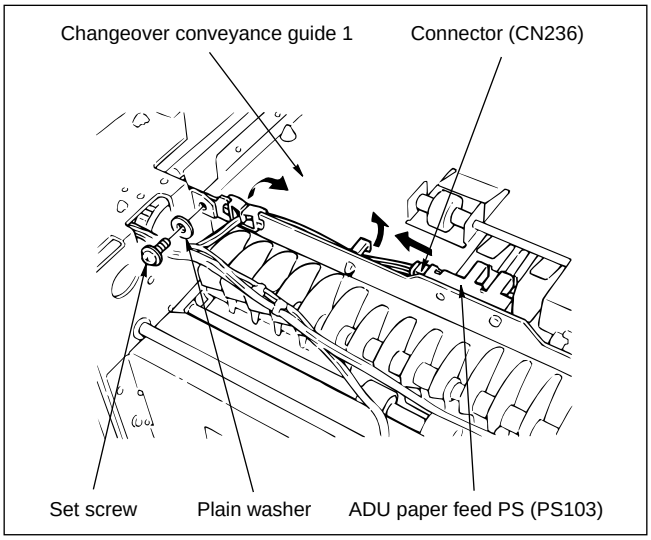
(1) Remove the main body from the DB-307.
(2) Open the ADU left door.
(3) Remove the two set screws, then remove the reinforcement plate.



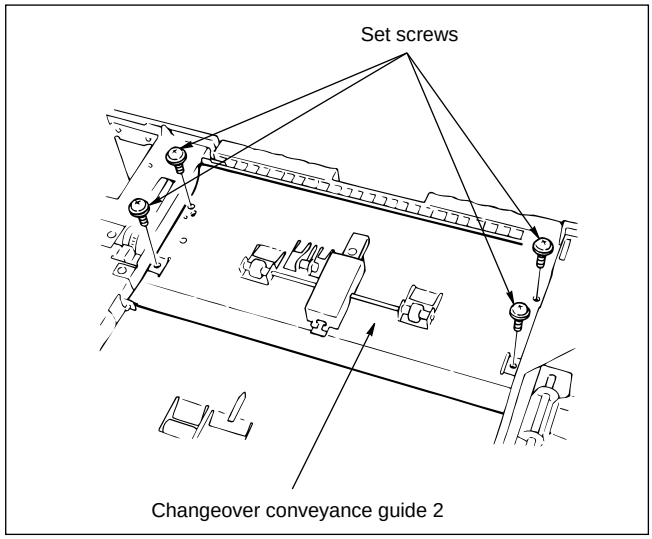
(4) Disconnect the connector (CN235) from the ADU paper exit PS (PS102).
(5) Remove the harnesses for LCT solenoid (SD104) and ADU left door interlock switch (MS102) from the harness clamps.



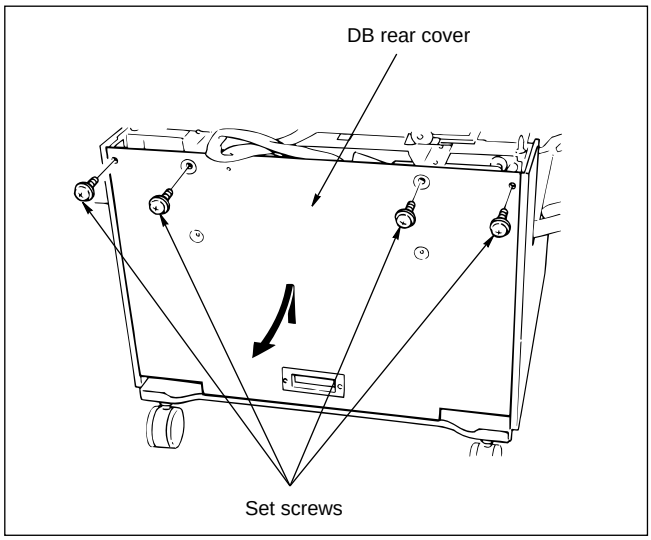
(6) Disconnect the connector (CN236) form the ADU paper feed PS (PS103), and the bundle of wires from the bundle tie.
(7) Remove the set screw and one plain washer, then remove the changeover conveyance guide 1.



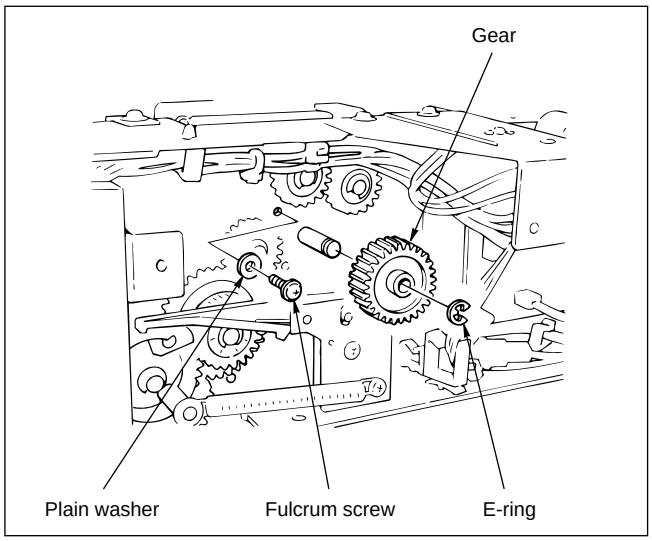
(8) Remove the four set screws, then remove the changeover conveyance guide 2.



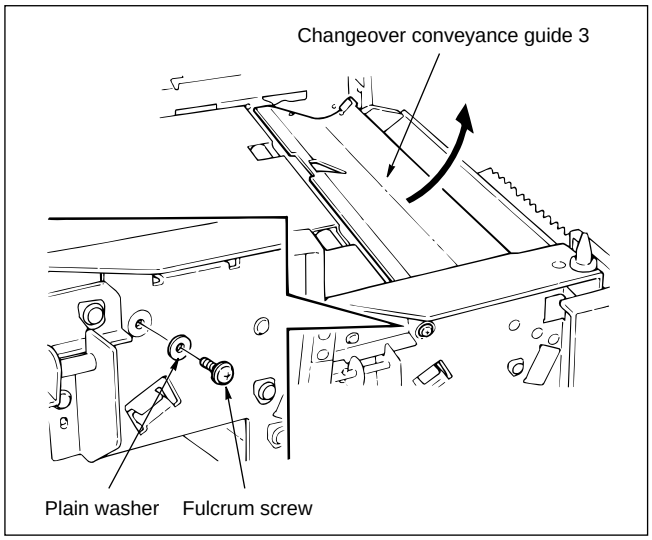
(9) Remove the four set screws, then remove the DB rear cover.



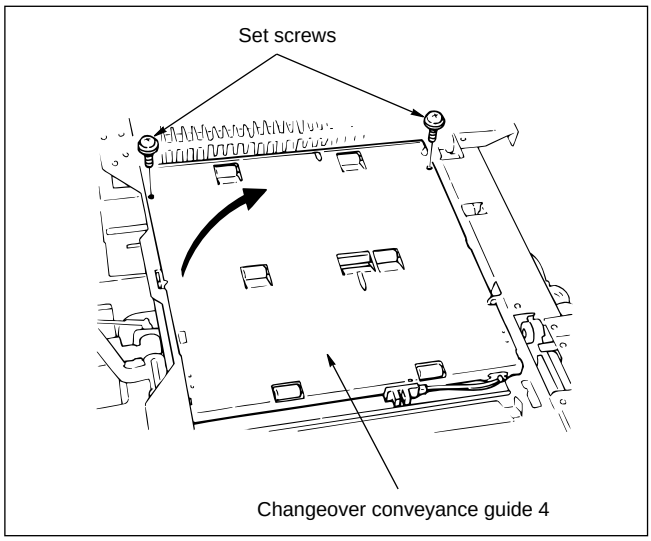
(10) Remove the gear by removing the E-ring, then remove the fulcrum screw and plain washer.



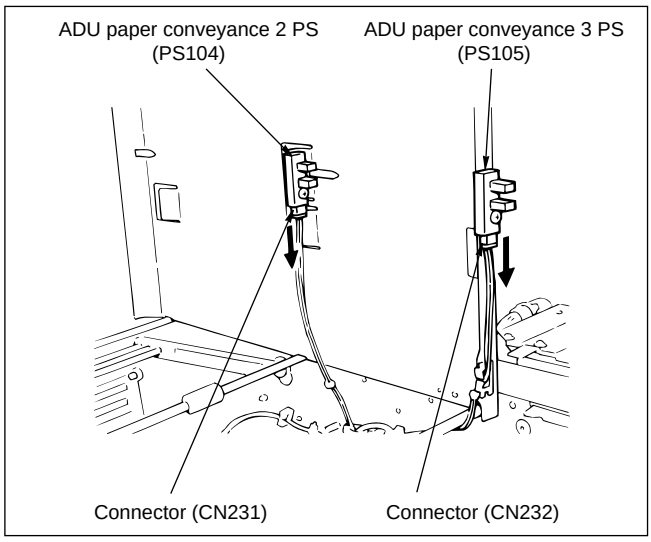
(11) Slide the LCT out to the front, and remove the fulcrum screw and plain washer from the front side, then remove changeover conveyance guide 3.



(12) Remove the two set screws, then remove the changeover conveyance guide 4.



(13) Disconnect the connectors (CN231, CN232) from ADU paper conveyance PS2 and 3 PSs (PS104, PS105).

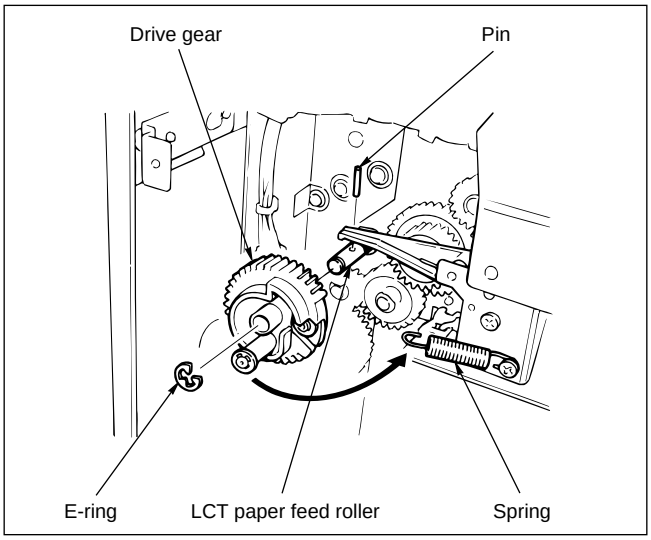


(14) Reinstall the guides in the reverse order of removal.

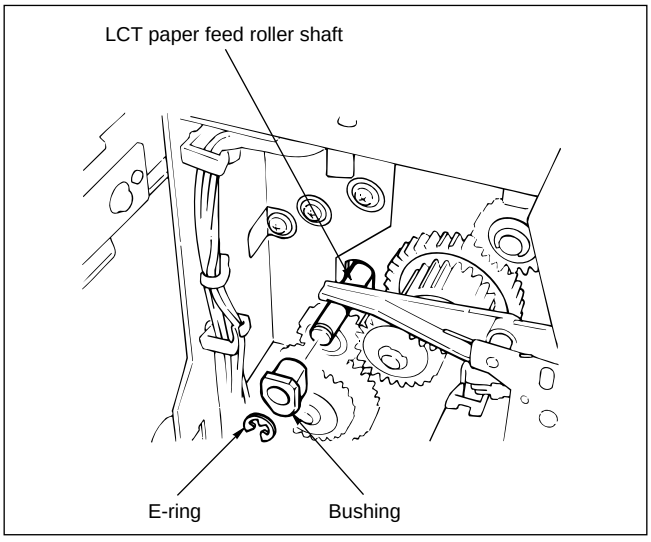
4. Removing/reinstalling the LCT paper feed roller

a. Procedure

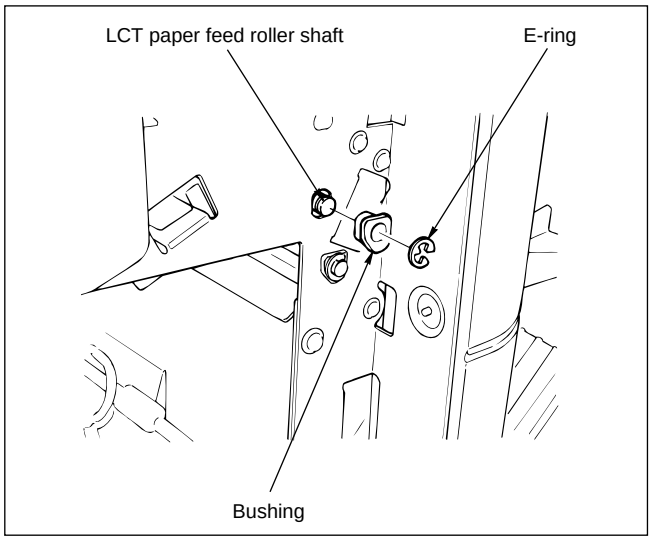
(1) Remove the DB rear cover.
(2) Remove the LCT tray.
(3) Remove the spring and E-ring from the drive gear, then remove the drive gear and pin from the LCT paper feed roller.



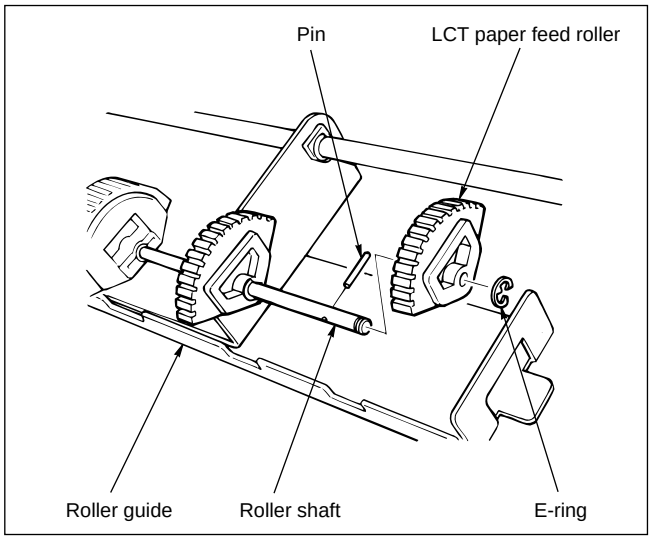
(4) Remove the E-ring and bushing from the shaft of the LCT paper feed roller.



(5) Remove the E-ring and bushing from the front side of the LCT paper feed roller shaft, ten take the LCT paper feed, roller unit out.



(6) Remove each E-ring, then remove the paper feed roller and pin from the roller shaft.

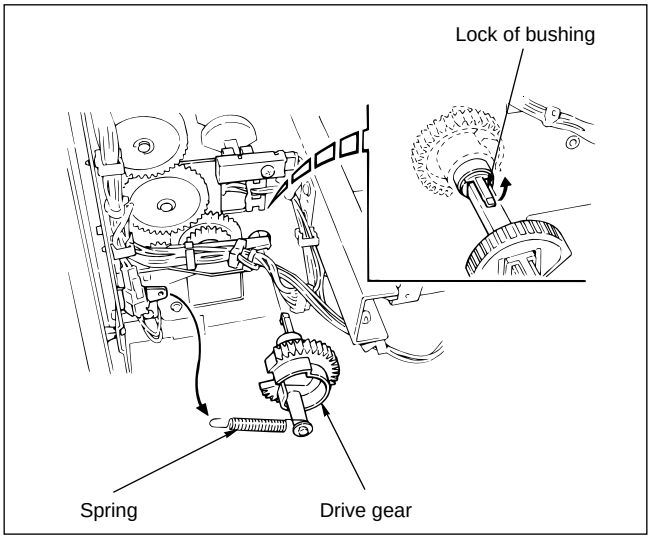


(7) Reinstall the roller in the reverse order of removal.

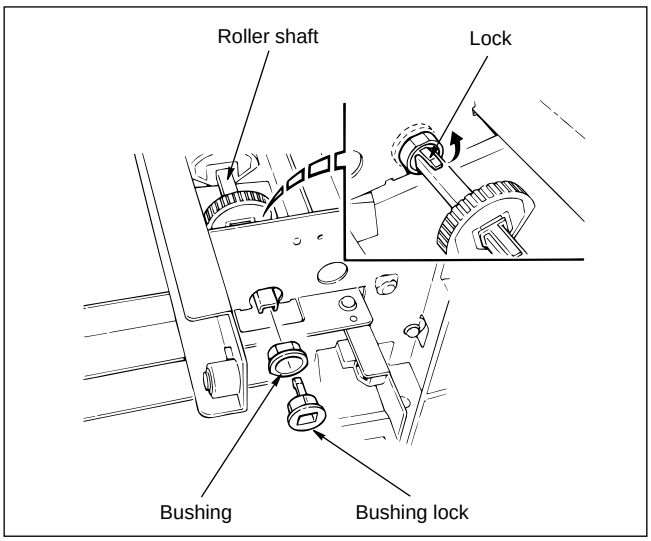
5. Removing/reinstalling the PFU paper feed roller

a. Procedure

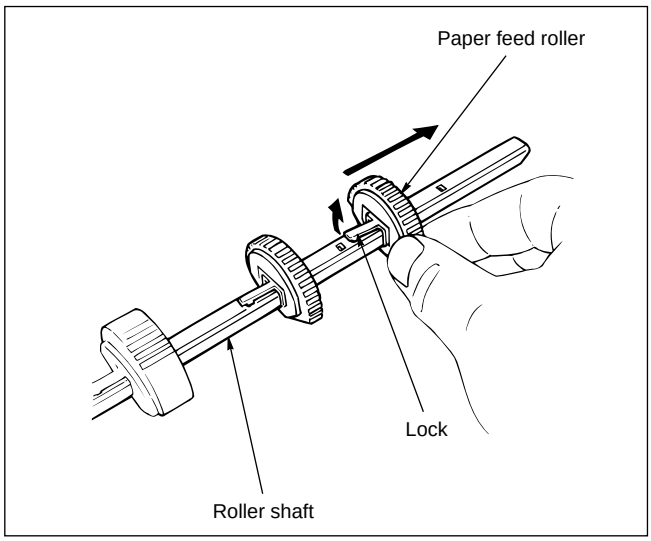
(1) Remove the DB rear cover.
(2) Remove the LCT tray.
(3) Remove the PFU tray.
(4) Remove the spring, then remove the drive gear by removing the lock of the bushing.



(5) Remove the lock of the bushing, then remove the bushing and roller shaft.

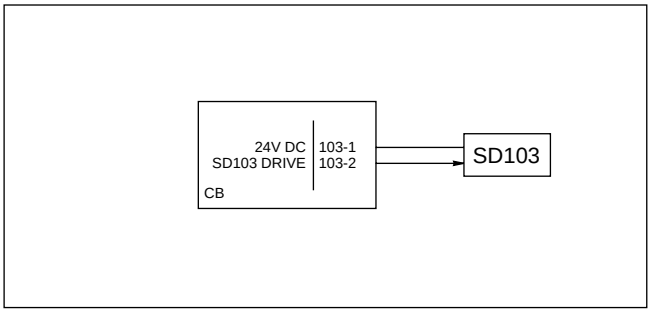


(6) Remove the lock and the paper feed roller from each of the shaft.



(7) Reinstall the roller in the reverse order of removal.

[5] Paper Exit Gate Control



The paper exit gate is driven by SD103 (ADU gate solenoid). The SD103 is controlled by the CB (control board) of the main body.

1. Operation

a. Changing the paper exit gate

The paper exit guide is raised by SD103 (ADU gate solenoid) to feed the paper to the ADU when PS8 (paper exit PS) is ON during the face side copying.

The paper exit guide is lowered due to OFF of SD103 when the face side copying has been completed. The paper is delivered to the exist tray after copying the back side.

2. Signal

a. Output signal

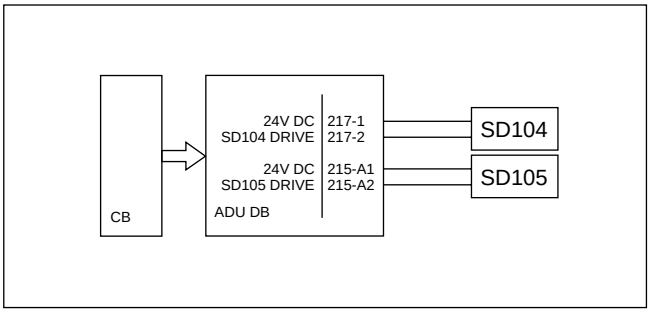
(1) SD103DRIVE (CB→SD103)

This is the ON/OFF signal for SD103.

[L] : SD103 ON (paper exit gate up)

[H] : SD103 OFF(paper exit gate down)

[6] Paper Feed Control



Paper is fed from the LCT or PFU by transmitting the drive force from M1 (main motor) to the paper feed roller using SD104 (LCT solenoid) or SD105 (PFU paper feed solenoid). SD104 and SD105 are controlled by the CB (control board) through ADUDB (ADU drive board).

1. Operation

SD104 or SD105 is turned ON for specified period to feed paper from the tray when the copy button is pressed. Paper feed for the 2nd and after will start at a specified interval from the previous paper feed ON.

2. Signal

a. Output signal

(1) SD104DRIVE (CB→SD104)

This is the ON/OFF signal for SD104.

[L] : SD104 ON

[H] : SD104 OFF

(2) SD105DRIVE (CB→SD105)

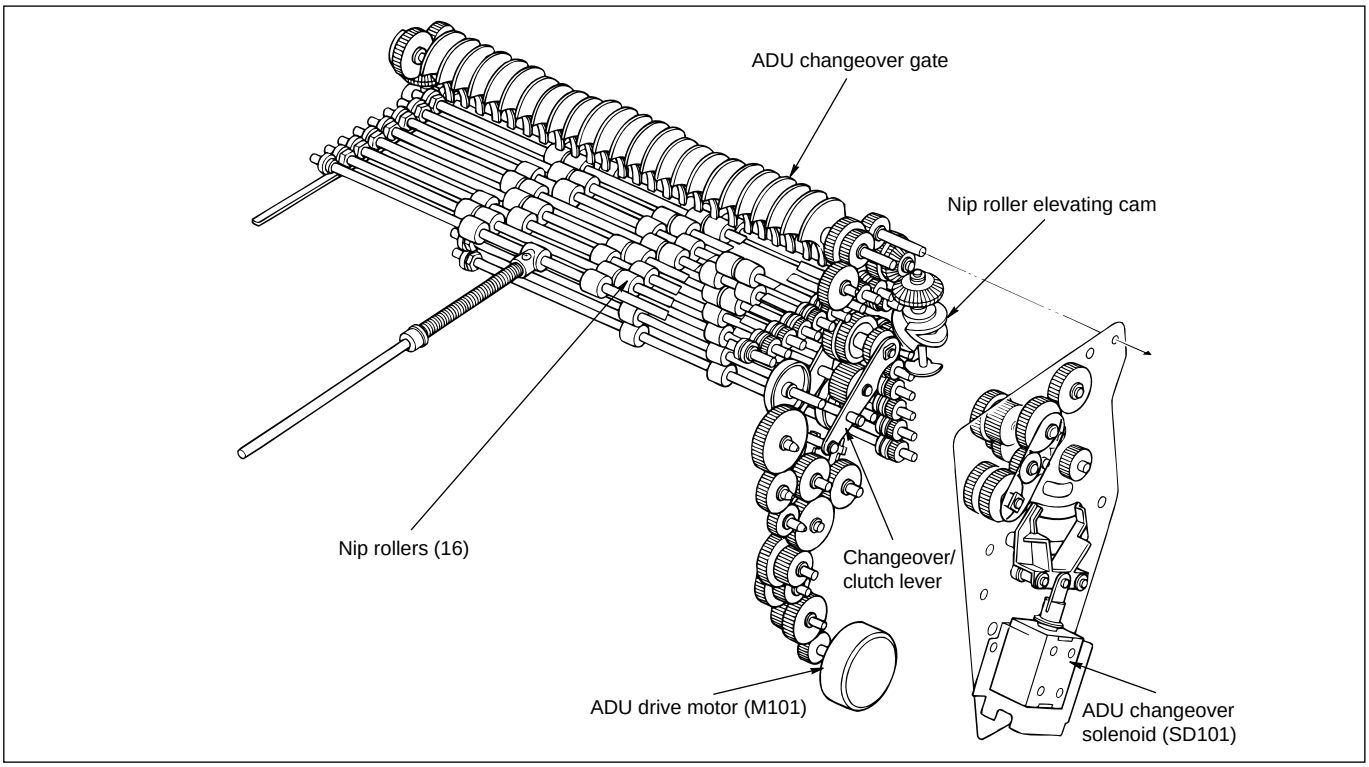
This is the ON/OFF signal for SD105.

[L] : SD105 ON

[H] : SD105 OFF

ADU NIP ROLLER DRIVE SECTION

[1] Construction



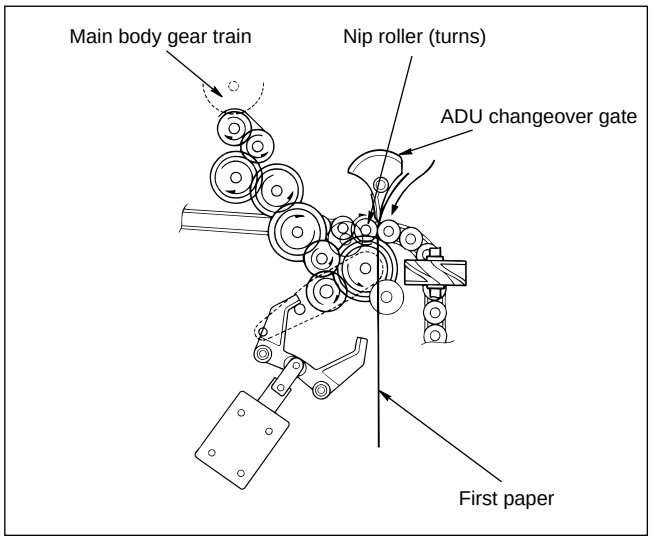
[2] Mechanism

	Mechanism	Method
	Paper conveyance	Nip roller (16)
	Paper changeover	ADU changeover gate
*1	Nip roller drive	Main motor/gear drive
*2	Nip roller rotation control	ADU changeover solenoid
*1	Nip roller elevating	ADU Drive Motor/Nip roller elevating CAM
*3	Nip roller dragging prevention	Hexagon cut at roller shaft end

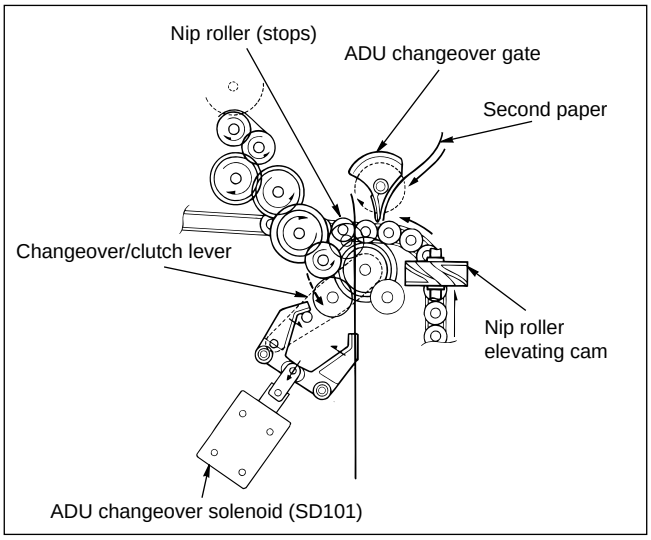
∗1. Stacking operation when copying first side

The nip roller is rotated by the main motor (M1) of the main body through the train of gears.

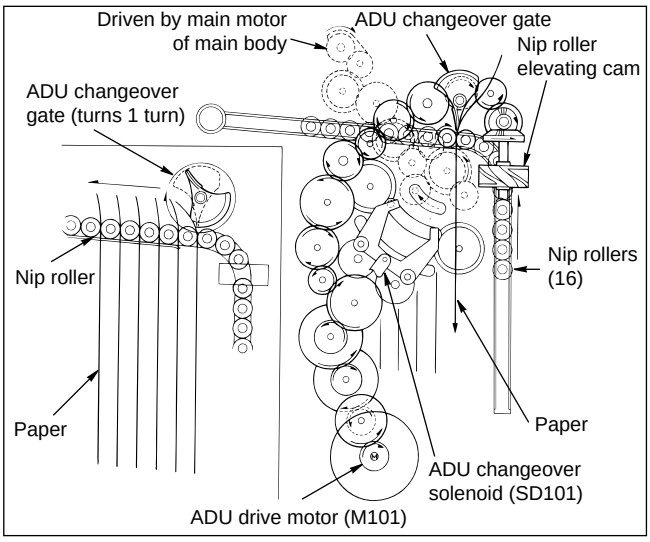
The first paper passes the ADU changeover gate end and is fed into the stack section by the nip roller.



When specified period elapses after the ADU paper conveyance 1PS (PS101) detects the trailing end of the paper. The ADU changeover solenoid (SD101) is turned ON, and the changeover/clutch lever is moved to the right side to disengage the gears, then the nip roller stops rotating.
Simultaneously, the ADU gate drive solenoid (SD102) is turned ON to allow the ADU changeover gate to rotate.
At the same time, the ADU drive motor (M101) is rotated, and the nip roller is moved into the stack by means of rotation of the nip roller elevating cams.
The changeover gate is rotated one turn to prevent the trailing end of the paper from catching it.

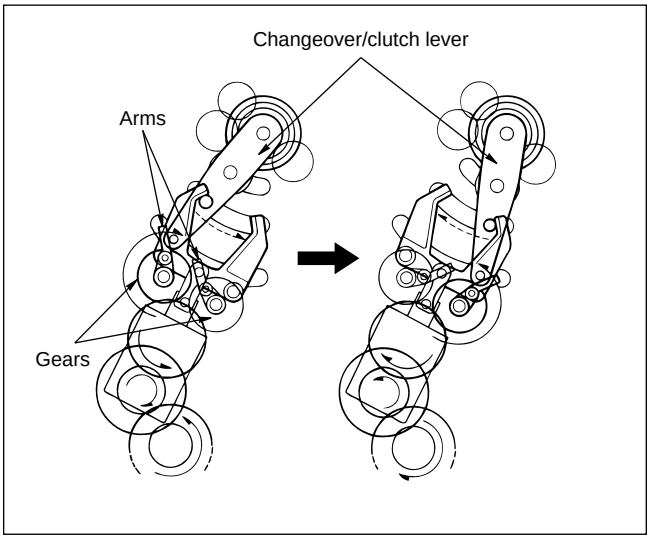


Then, the ADU drive motor (M101), ADU changeover solenoid (SD101) and ADU gate drive solenoid (SD102) are stopped until the next paper is fed into the stacker.
The ADU repeats above operation until all papers up to 10 sheets are fed in the stack section.



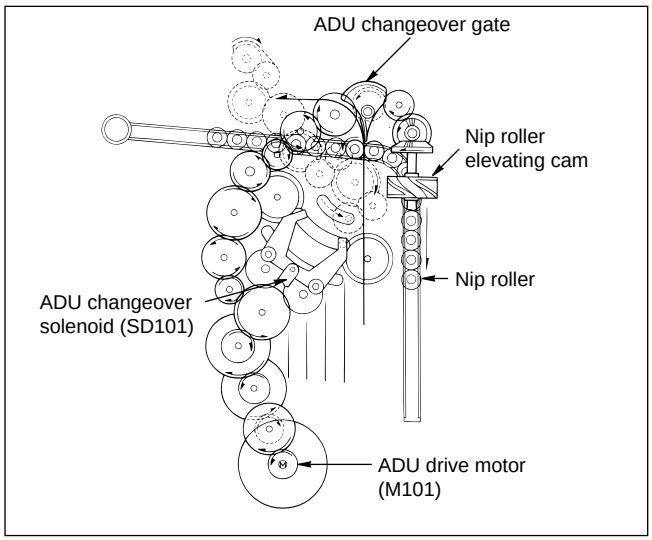
∗2. Paper changeover operation

When the copy button is ON for the back side copying, the ADU drive motor (M101) is rotated for a specified period. The changeover/clutch lever is turned to the right (changeover) side by the two arms on the gears.



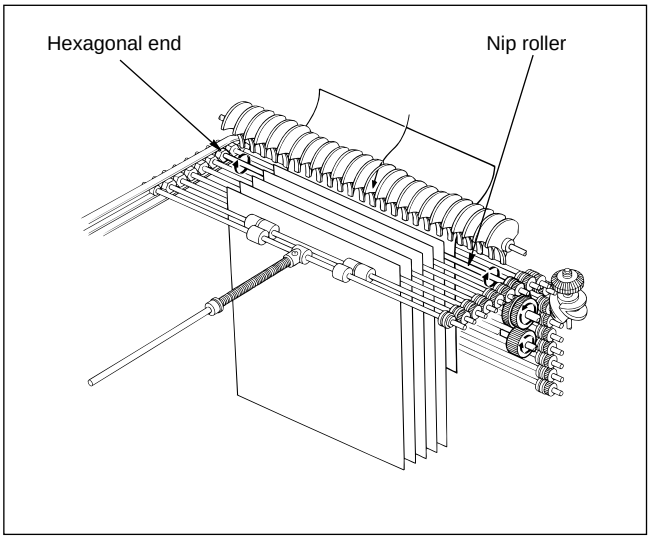
The nip roller is rotated in the reverse (changeover) direction by the movement of the changeover/clutch lever. The paper is fed into the changeover conveyance section along the changeover gate.
The ADU changeover solenoid (SD101) is turned ON and the gears are disengaged to stop the rotation of the nip roller.
At the same time, the ADU drive motor (M101) is ON for 2.6 seconds to return the nip roller one pitch to the home position side by means of the nip roller elevating cams.
Then the ADU drive motor (M101) and ADU changeover solenoid (SD101) are stopped and the next paper is fed by the nip roller.

By repeating the above operation at 2.6 seconds interval, all papers in the stack section are fed to the main body through the changeover section.



* 3. Nip roller dragging prevention

The hexagonal end of the nip roller prevents dragging of the nip roller from the once behind.



[3] Disassembly and Reassembly

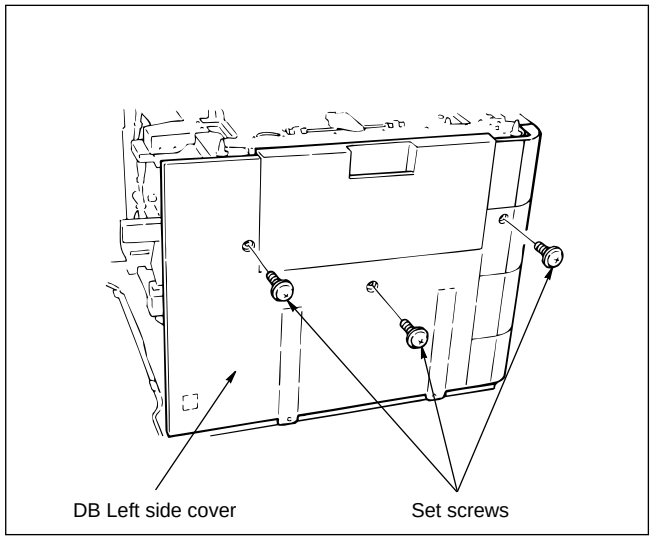
⚠ Caution: Disconnect the power cable plug from the wall outlet.

1. Removing/reinstalling the gear bracket

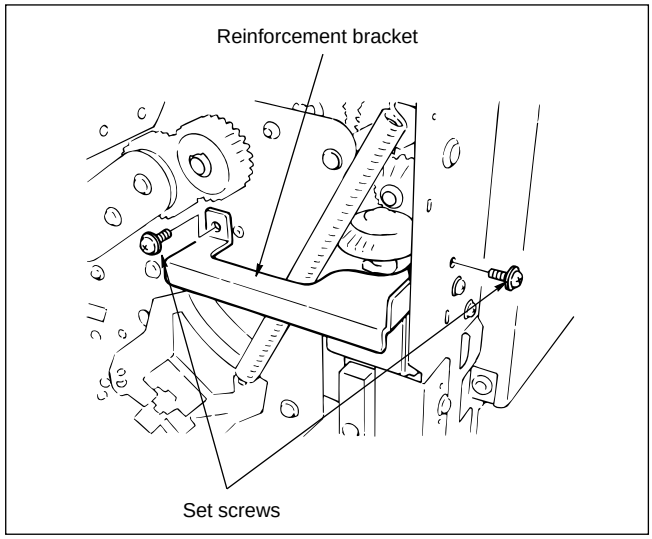
a. Procedure

(1) Remove the DB rear cover.

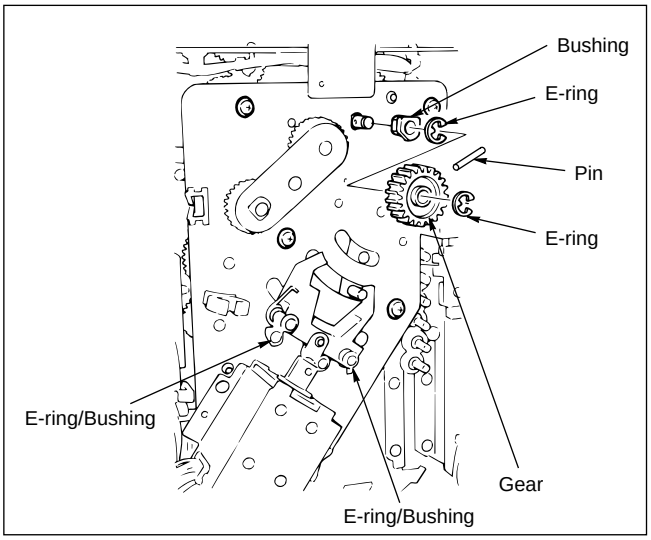
(2) Remove the three set screws, then remove the DB left side cover.



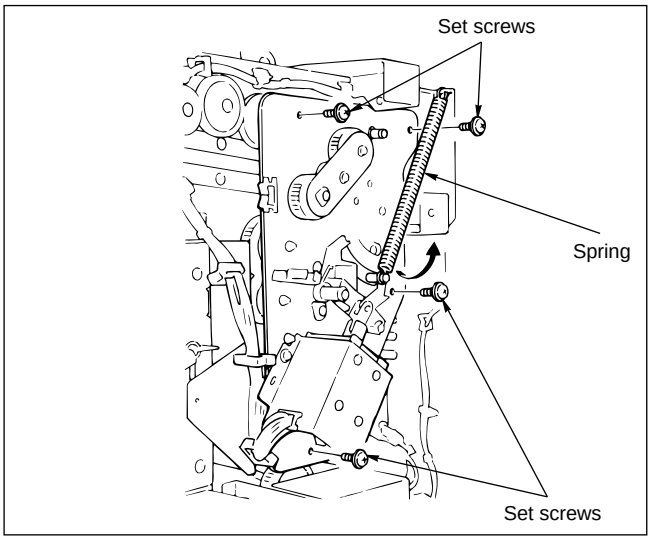
(3) Remove the two set screws, then remove the reinforcement bracket.



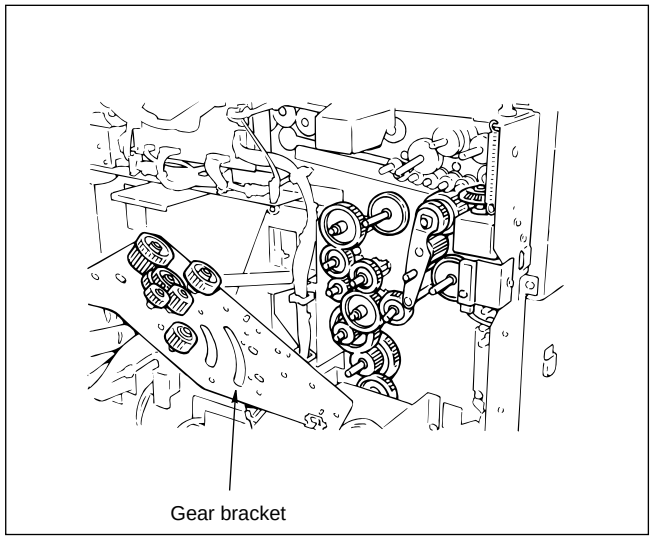
(4) Remove the E-ring, then remove the gear and pin.
(5) Remove the 3 E-ring, then remove the 3 bushing.



(6) Remove the spring and four set screws.



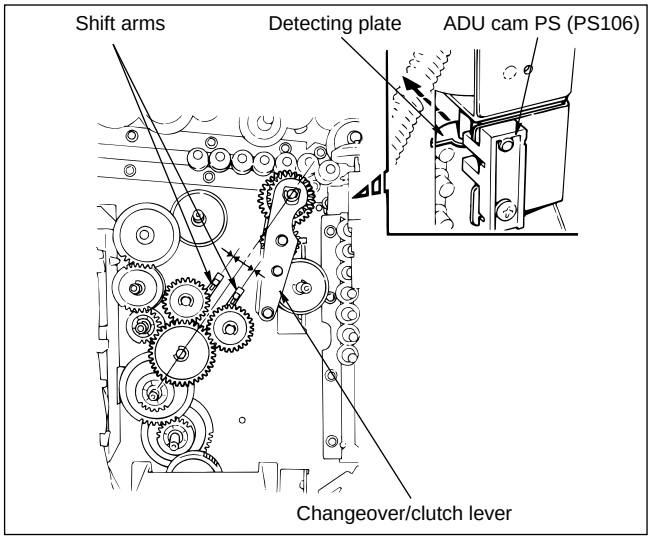
(7) Remove the gear bracket.



(8) Reinstall the bracket in the reverse order of removal, but the following must be checked:

Note:

1. Turn the nip roller elevating cam so that the detecting plate of the ADU cam PS (PS106) faces the direction as shown in the figure below.
2. Position the changeover/clutch lever shift arms are in the position as shown in the figure below, then reinstall the gear bracket.

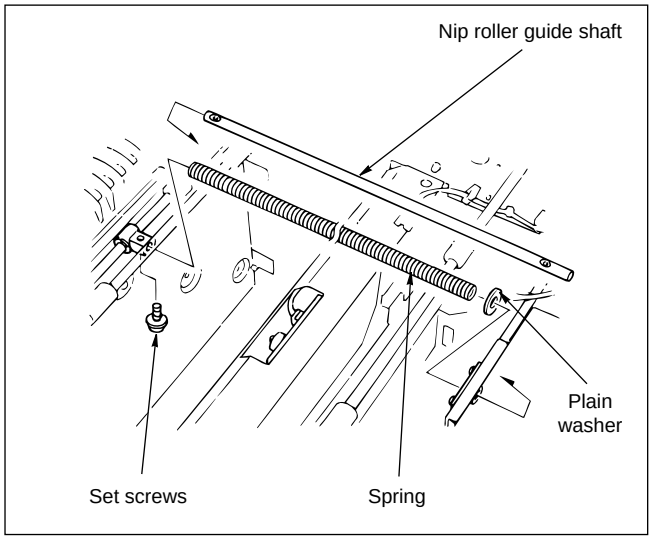


2. Removing/reinstalling the stack guide plate

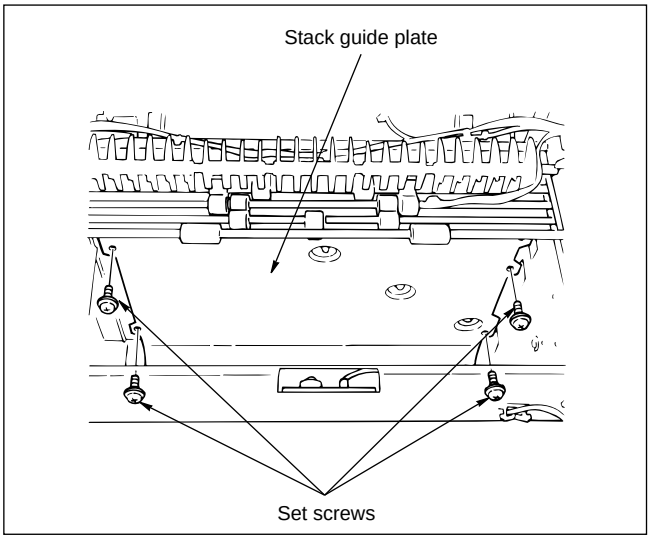
a. Procedure

(1) Remove the ADU changeover conveyance guide plates (1-4) (see main drive section).

(2) Remove the set screw, then remove the nip roller guide shaft, spring and plain washer.

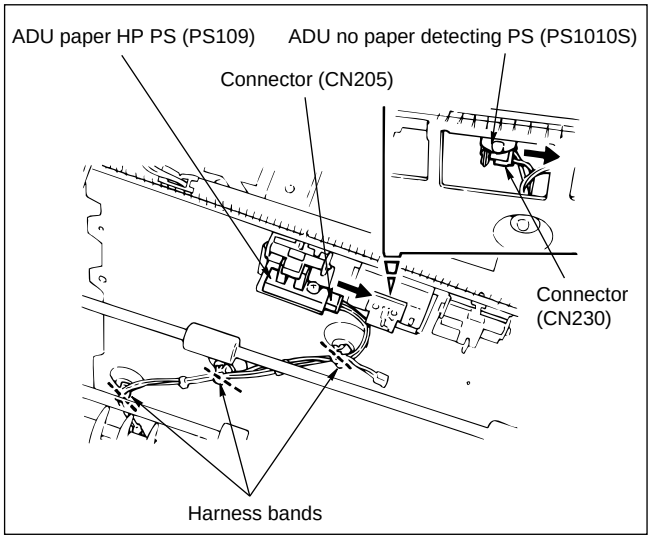


(3) Remove the four set screws, then remove the stack guide plate.



(4) Cut the three harness bands.

(5) Disconnect the connectors (CN230, CN205) from the ADU no paper detecting PS (PS1010S) and ADU paper HP PS (PS109), and remove the stack guide plate from the top of this machine.



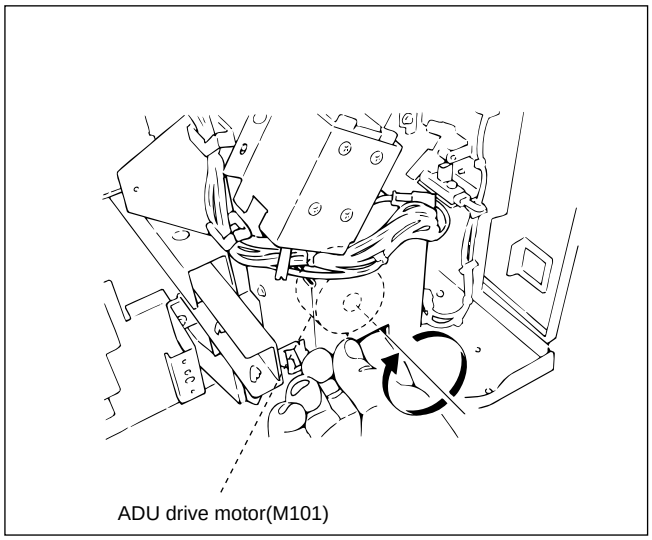
(6) Reinstall the guide plate in the reverse order of removal.

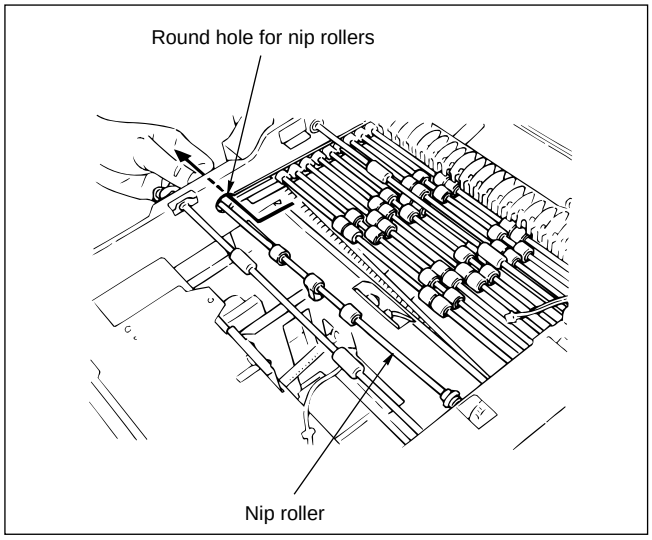
3. Removing/reinstalling the nip rollers

a. Procedure

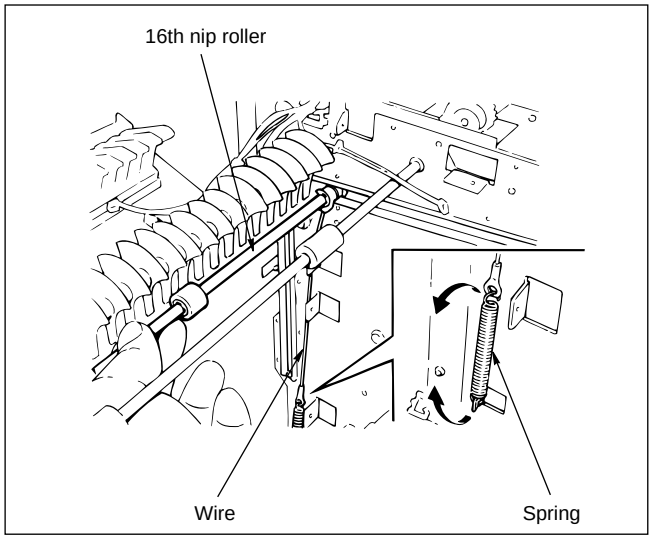
(1) Remove the stack guide plate.

(2) Move the nip rollers at the home position side to the stack side by turning the ADU drive motor (M101) by hand, then remove them through the nip roller round hole.



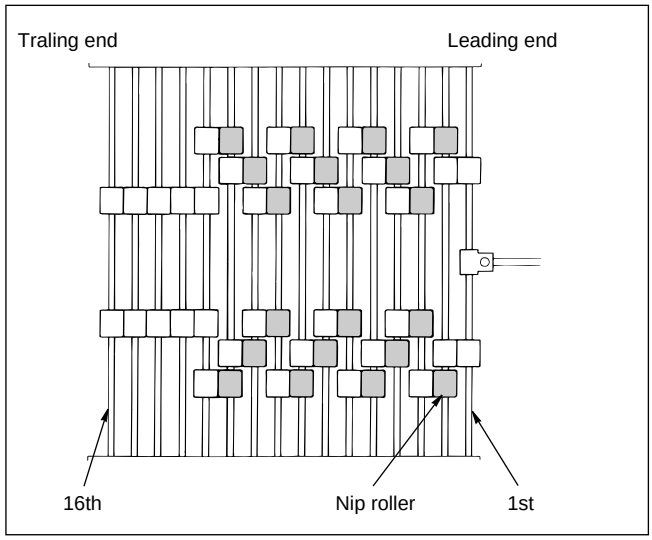


(3) Remove the two springs (front and back) from the wires and remove the 16th nip roller.



(4) Reinstall the nip rollers in the reverse order of removal, and pay attention to the following.

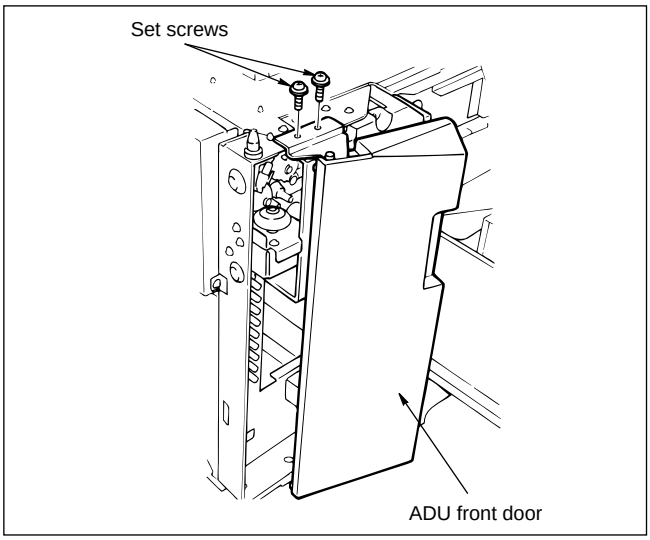
Note: When installing arrange them as shown in the figure below.



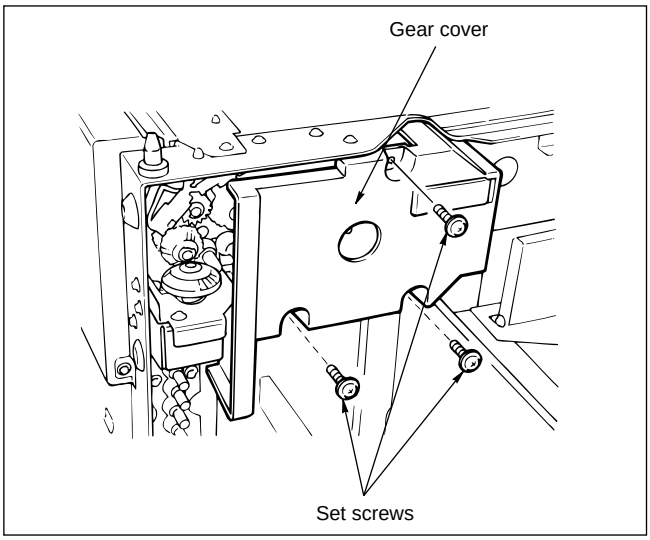
4. Removing/reinstalling the nip roller elevating cams.

a. Procedure

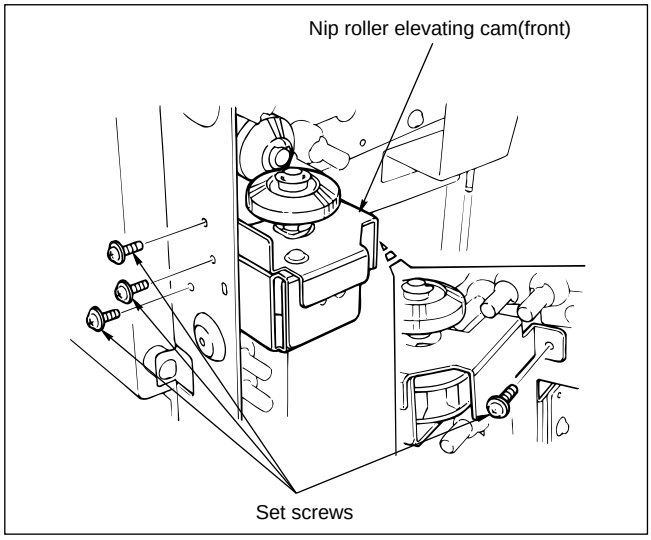
(1) Remove the nip rollers.
(2) Remove the DB left side cover.
(3) Remove the two set screws, then remove the ADU front door.



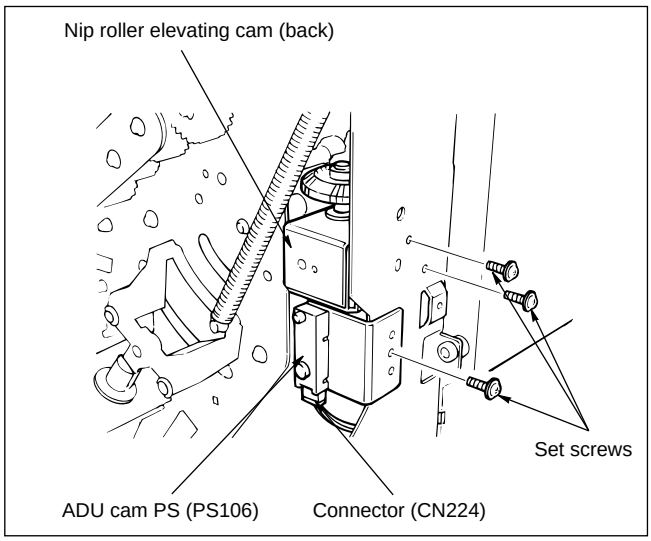
(4) Remove the three set screws, then remove the gear cover.



(5) Remove the four set screws, then remove the nip roller elevating cam (front).



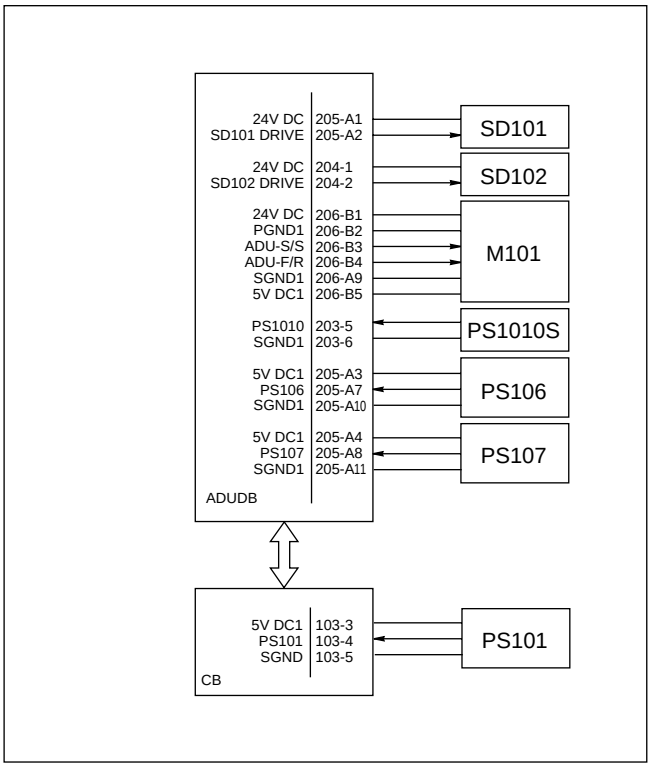
(6) Disconnect the connector (CN224) from the ADU cam PS (PS106).
(7) Remove the three set screws, then remove the nip roller elevating cam (back).



(8) Reinstall the cams in the reverse order of removal.

Note: (1) Adjust nip roller timing before installing the nip rollers (see adjustment section).
(2) Adjust bevel gear backlash when installing the elevating cam.

[4] ADU Control



1. Operation

a. Nip roller home position detection

If the nip roller is not in the home position when the main switch is turned ON, the M101 (ADU drive motor) will turn in counterclockwise direction. Then M101 stops when PS107 (roller PS) detects the nip roller.

b. Stacking operation after the face side copying

If a specified period of time has elapsed after the detection of the trailing end by the PS101 (ADU conveyance 1 PS), the following loads will be turned ON simultaneously:

1) SD101 (ADU changeover solenoid)
   When the SD101 is turned ON, the changeover clutch lever is shifted to cause the nip roller to stop.
2) SD102 (ADU drive solenoid)
   The SD102 releases the lock from the drive gear so that the ADU changeover gate can be rotated.
3) M101 (ADU drive motor)
   When the normal rotation of the M101 starts, the nip roller (that has already nipped the paper) is forced to shift to the stacker side with the help of the elevating cams.
   If the elevating cams are rotated one turn and the PS106 (ADU cam PS) detects the home position, M101 is applied a reverse brake for a specified period of time, and then stopped. When M101 is stopped, SD101 and SD102 are turned OFF simultaneously until the next paper is nipped by the nip roller.
   This sequence of events will be repeated until a specified number of stacking has finished.

c. Changeover operation for the back side copying

The following loads will be turned ON to conduct paper re-feeding when the back side copying starts.

1) SD101 (ADU changeover solenoid)
   When SD101 is turned ON, the driving to the nip roller is disengaged.
2) M101 (ADU drive motor)
   The M101 rotates in the reverse direction to shift the changeover/clutch lever to the opposite side of the nip rollers.
   Another reverse rotation is applied to the elevating cams to shift the nip roller to the paper exit side.
   A reverse brake is applied to M101 for a specified period after PS106 (ADU cam PS) detects its home position, then M101 stops.
   At the same time, SD101 goes off to apply reverse rotation to the nip roller. By this operation, papers are delivered to the changeover conveyance section.
   After this, M101 and SD101 go on at 2.6 sec. intervals to make the elevatating cam rotate once.
   Reverse operation will stop when PS1010s (ADU no paper detection PS) detects no paper condition.

2. Signal

a. Input signal

(1) PS107 (PS107 → ADUDB)
This is the signal for the nip roller home position.
[L]: Nip roller home position
[H]: Nip roller out of home position

(2) PS106 (PS106 → ADUDB)
This is the signal for cam one turn.
[L]: Detects detecting plate (cam home position)
[H]: Not detect detecting plate (cam out of home position)

(3) PS1010s (PS1010s → ADUDB)
This is the signal for no paper in the stacker.
[L]: No paper
[H]: Detects paper

(4) PS101 (PS101 → CB)
This is the signal for paper feed from the main body to the ADU.
[L]: No paper
[H]: Detects paper

b. Output signal

(1) ADU-S/S (ADUDB → M101)
This is the start/stop signal to M101.
[L] : M101 OFF
[H] : M101 ON

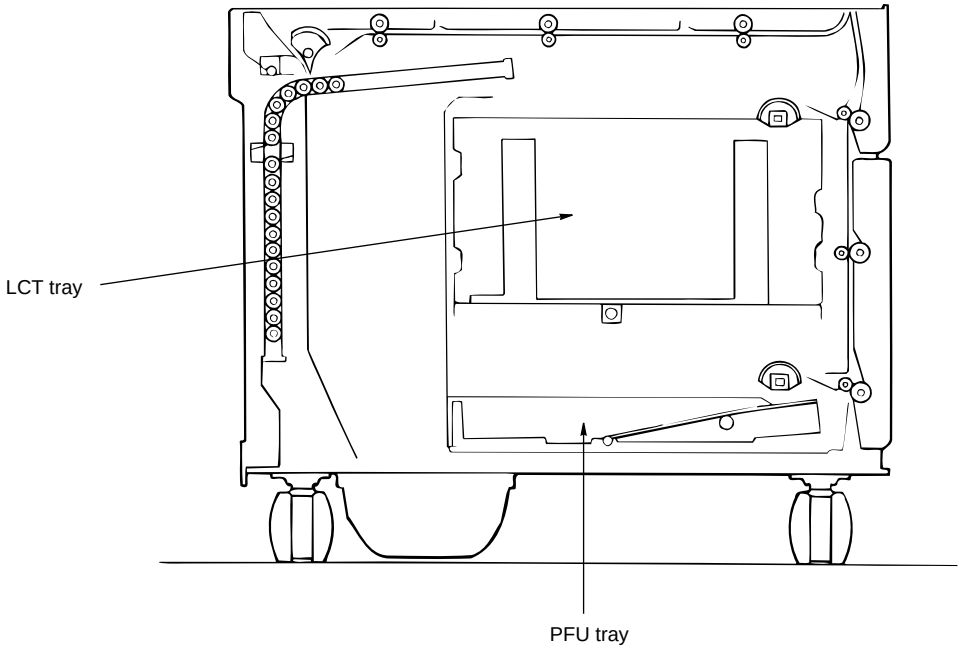
(2) ADU-F/R (ADUDB → M101)
This is the clockwise/counterclockwise drive signal for M101.
[L] : Reverse rotation
[H] : Normal ratation

(3) SD101DRIVE (ADUDB → SD101)
This is the ON/OFF signal for SD101.
[L] : SD101 ON
[H] : SD101 OFF

(4) SD102DRIVE (ADUDB → SD102)
This is the ON/OFF signal for SD102.
[L] : SD102 ON
[H] : SD102 OFF

LCT/PFU SECTION

[1] Construction



[2] Mechanism

Mechanism	Method
Paper feed	paper feed roller
∗1 LCT paper lift	LCT motor/gear/wire drive
Paper conveyance	Rollers

∗1. Paper Lift Operation of LCT Tray

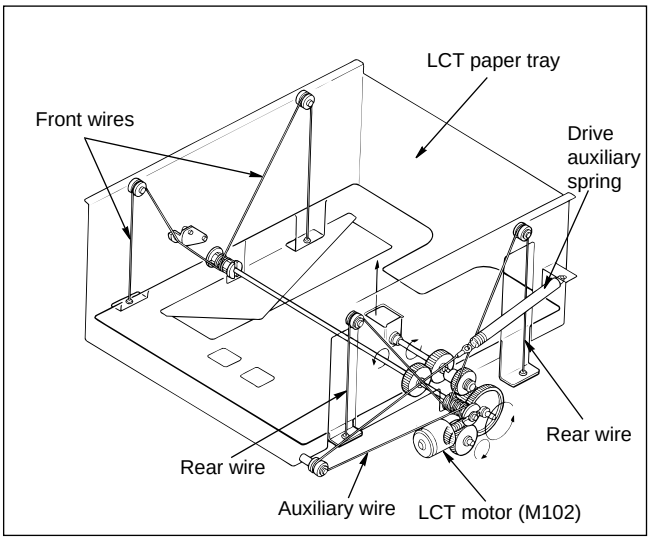
The LCT paper tray is suspended by using four elevating drive wires (2 :front, 2 :back).

As the weight of the tray increases in accordance with the quantity of paper in the tray, the drive auxiliary spring helps the tray counterbalance the weight of paper.

When the LCT paper tray is loaded with paper, the LCT motor (M102)turns, and the tray starts to be lifted up by the drive wire wound around the driver reel.

When the LCT paper tray is pulled out, the coupling with the drive section becomes disengaged, and the tray is lowered to a position where the drive auxiliary spring becomes with the tray.

When the LCT tray is drawn, the gears are disengaged and the paper lift plate lowers due to the paper weight.



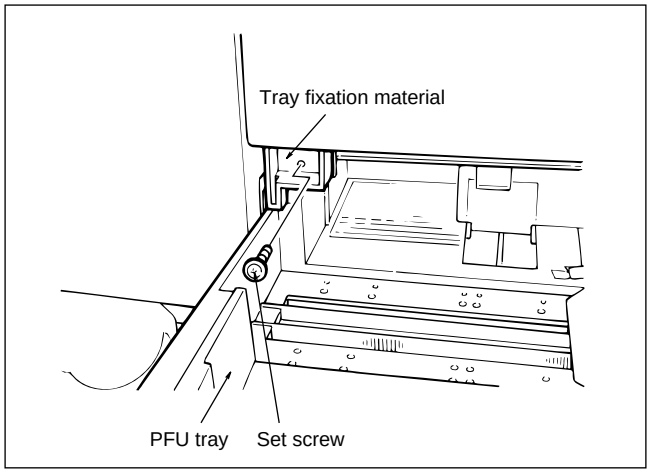
[3] Disassembly and Reassembly

Caution: Disconnect the power cable plug from the wall outlet.

1. Removing/reinstalling the PFU tray.

a. Procedure

(1) Remove the set screw, then remove the tray fixation material.



(2) Withdraw the PFU tray.

(3) Reinstall the PFU tray in the reverse order of removal.

2. Replacing the LCT lift drive wires

Note:

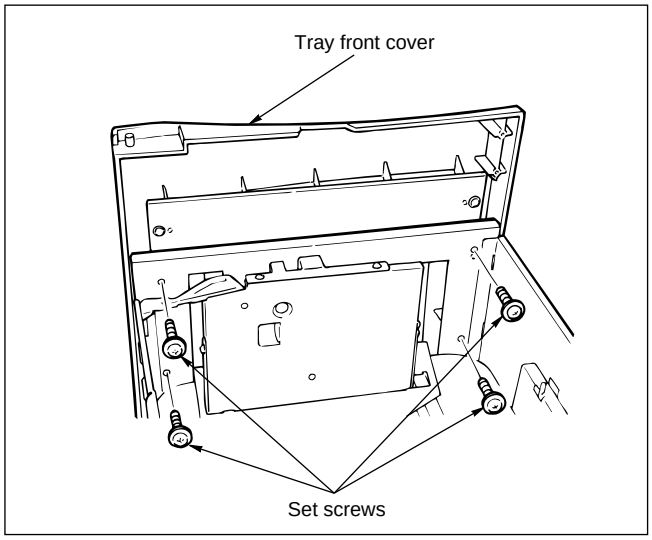
(1) After replacing the wires, make sure the paper tray moves up and down smoothly by pressing it by hand.

(2) After replacing the wires, adjust the paper tray inclination.

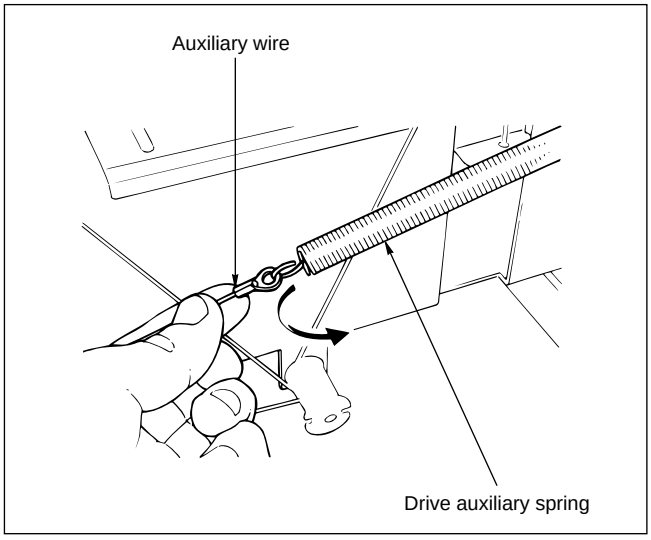
a. Procedure

(1) Pull the LCT tray out toward the front, then remove it out of the fixation rail.

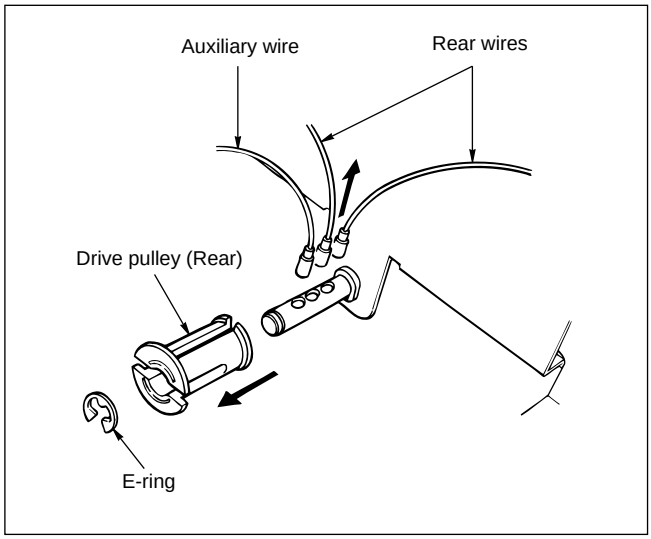
(2) Remove the four set screws, then remove the LCT tray front cover.



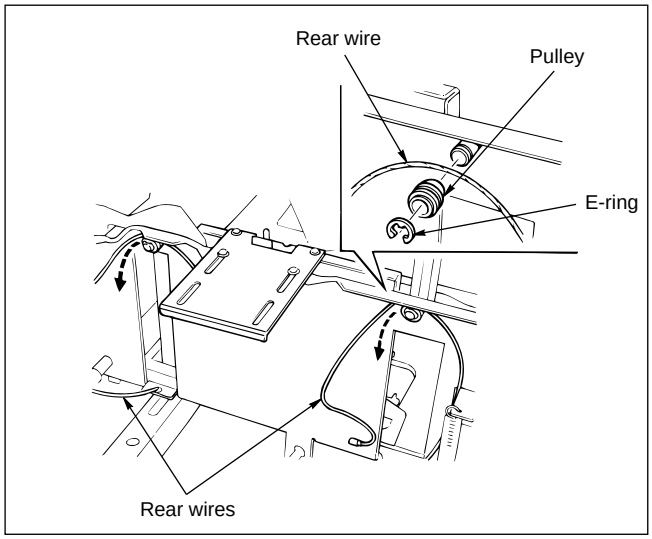
(3) Disconnect the auxiliary wire from the drive auxiliary spring.



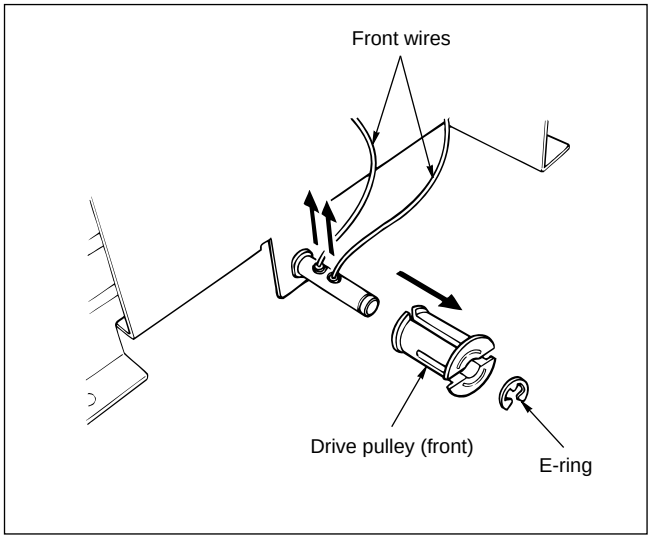
(4) Disconnect the auxiliary and rear wires from the drive shaft by removing the E-ring and drive pulley.



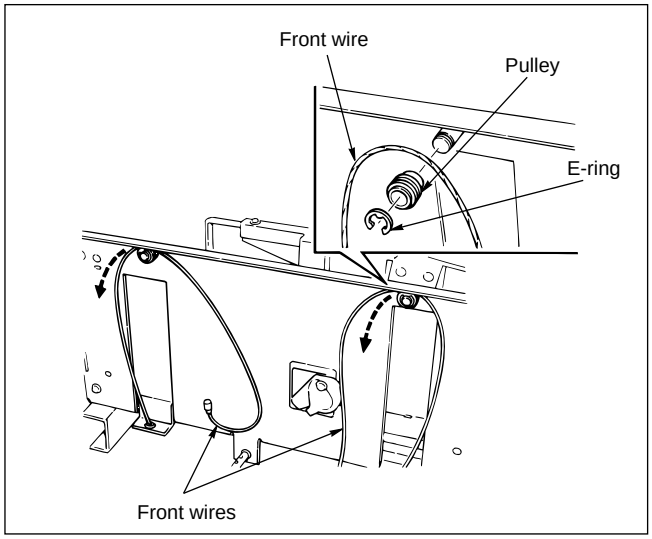
(5) Remove the two E-rings and pulleys, then remove the two rear wires.



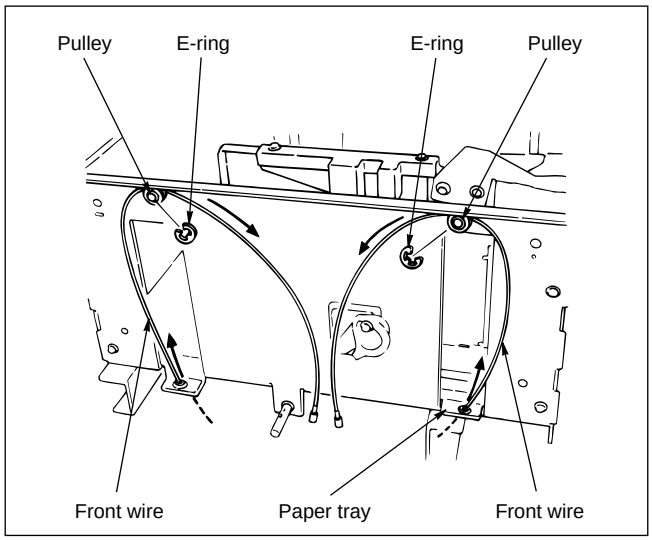
(6) Disconnect the two front wires from the drive shaft by removing the E-ring and drive pulley



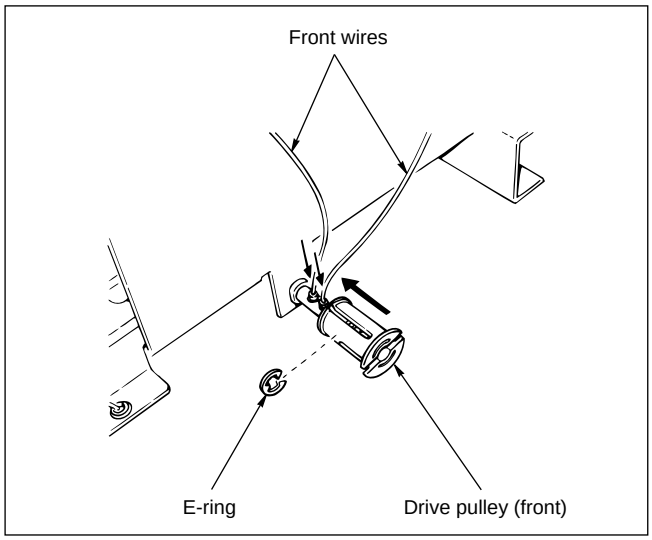
(7) Remove the two E-rings and pulleys, then remove the two front wires.



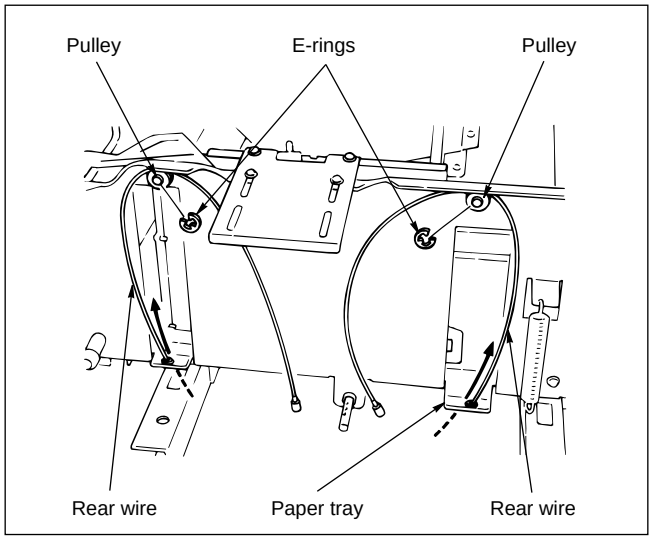
(8) Pass two new wires through the holes in the front of the paper tray and install the two pulleys and secure them with the E-rings.



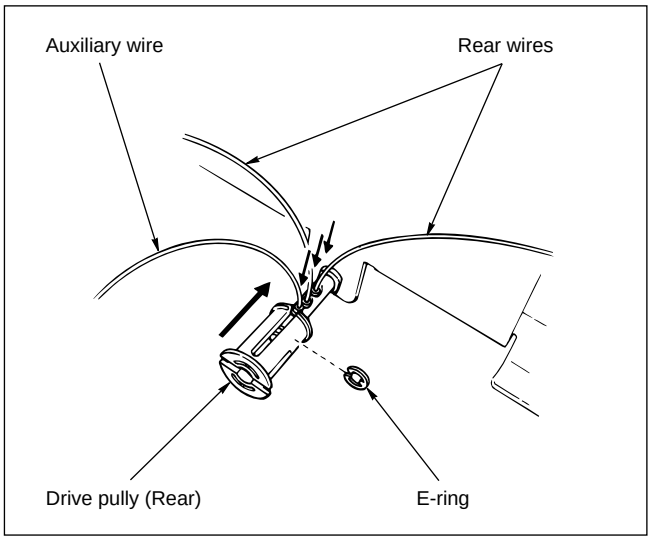
(9) Insert the ends of the front wires into the holes in the drive shaft, install the drive pulley and secure it with the E-ring.



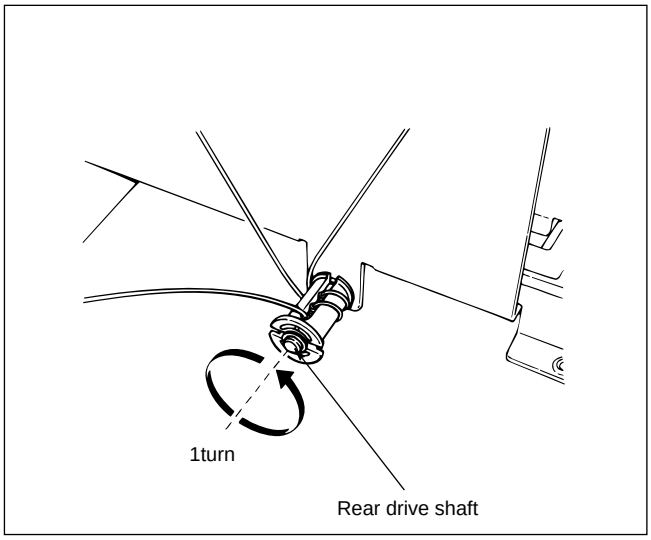
(10) Pass two new wires through the holes in the rear of the paper tray, install the two pulleys and secure them with the E-rings.



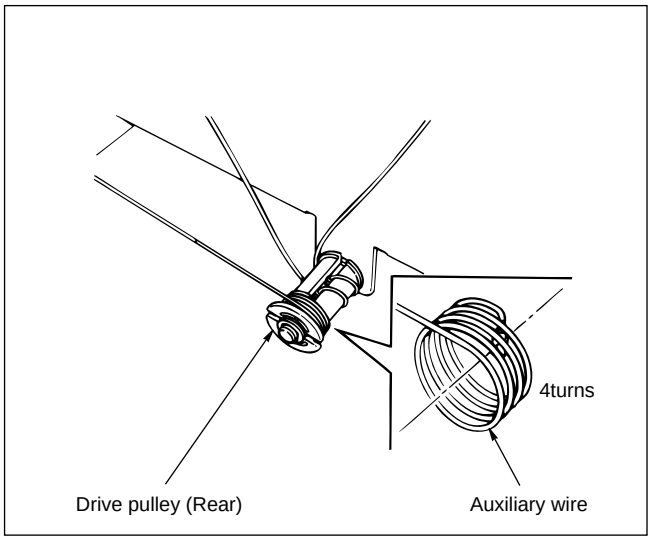
(11) Insert the ends of a new auxiliary wire and the rear wires into the holes in the drive shaft, install the drive pulley and secure it with the E-ring.



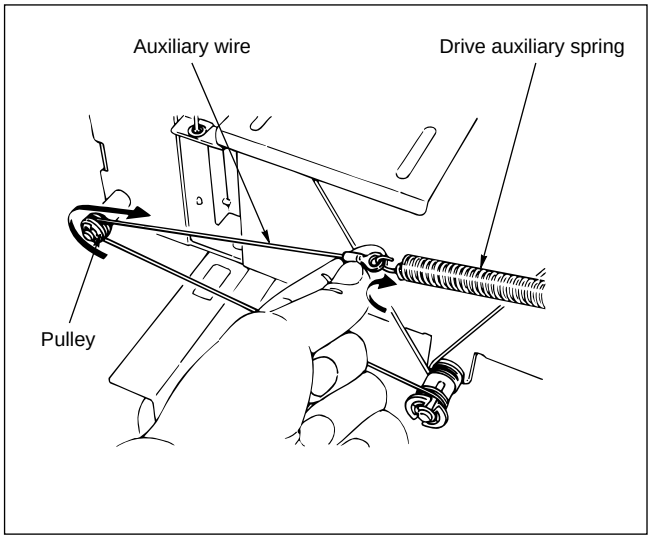
(12) Turn the rear drive shaft one turn counterclockwise from the rear side.



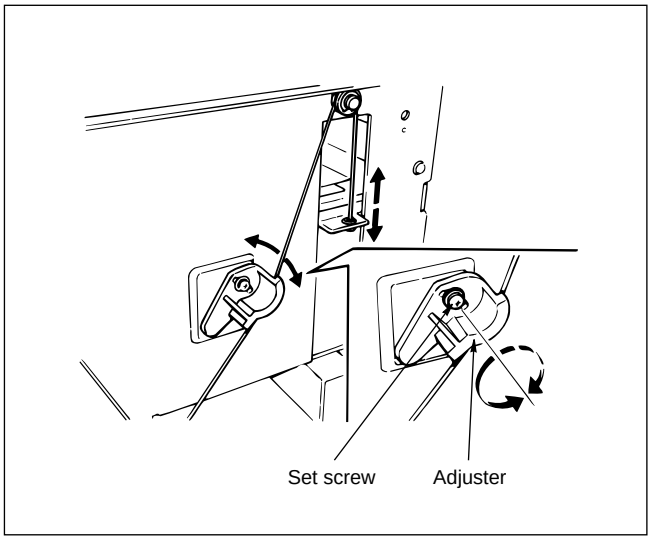
(13) Wind the auxiliary wire four turns counterclockwise around the drive pulley.



(14) Connect the auxiliary wire to the drive auxiliary spring through the pulley.

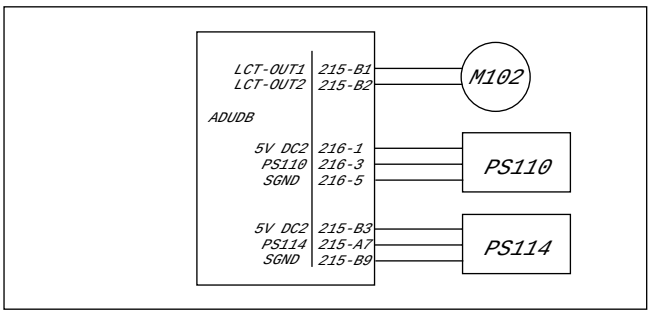


(15) Loosen the set screw and adjust inclination of the paper tray by moving the adjuster, then tighten the set screw.



(16) Reinstall the tray front cover with the four set screws.
(17) Reinstall the LCT tray.

[4] LCT Lift Control



Lifting of the LCT tray is driven by M102 (LCT motor). M102 is controlled by the ADUDB (ADU drive board).

1. Operation

a. LCT lifting (when inserting the LCT tray)

When PS114 (LCT PS) detects insertion of the LCT tray, M102 (LCT motor) drives the paper lift plate up.
When PS110 (LCT upper limit PS) detects the top of the paper, M102 stops.

b. LCT lifting (after paper feeding is conducted)

When the top of the paper lowers due to paper feeding from the LCT tray, PS110 is turned OFF and M102 drives the paper lift plate up.
When PS110 (LCT upper limit PS) detects the top of the paper, M102 stops.

2. Signal

a. Input signal

(1) PS114 (PS114 → ADUDB)
This is the LCT tray insertion detection signal.
[L]: LCT tray insertion detected
[H]: LCT tray not detected

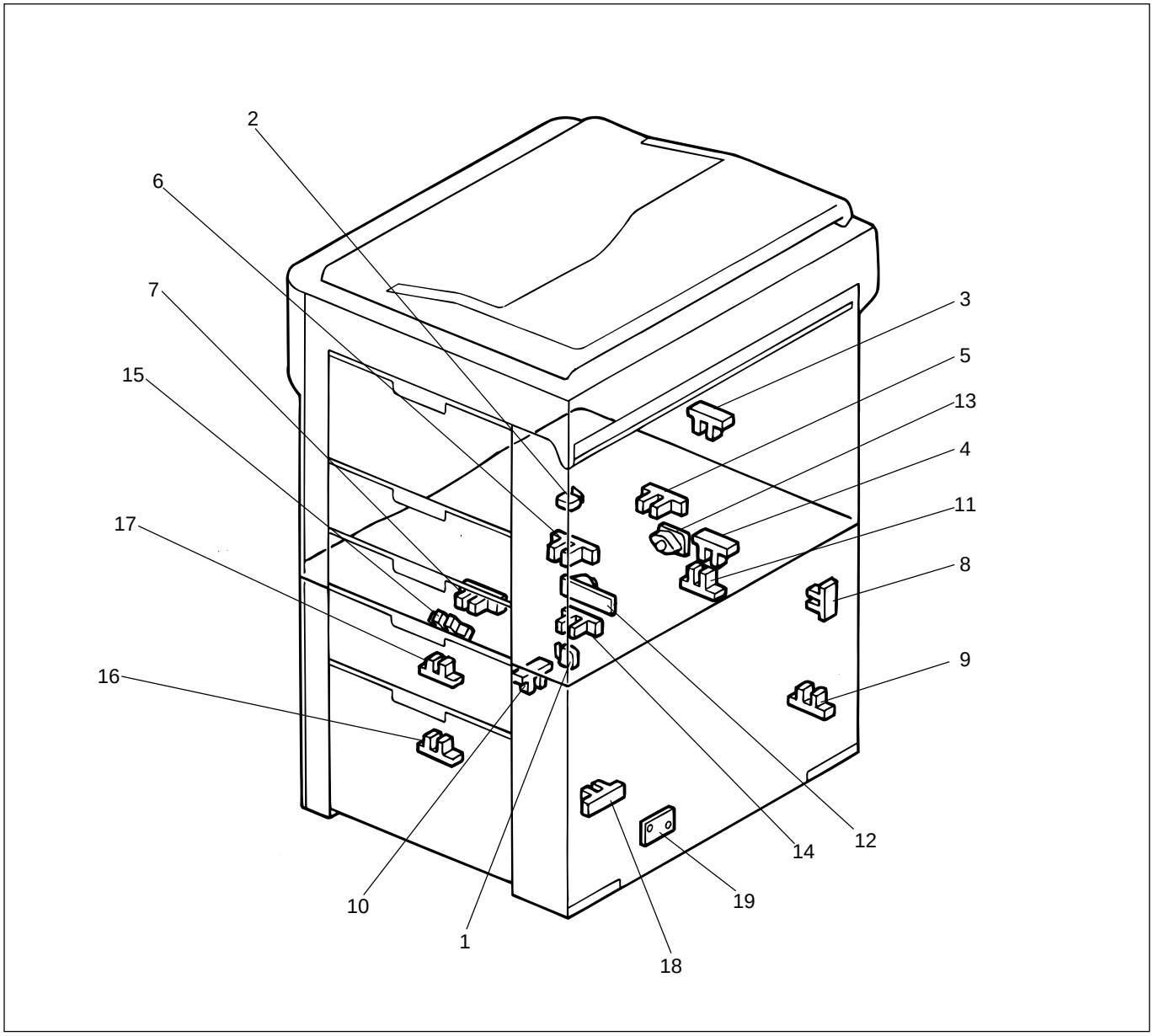
(2) PS110 (PS110 → ADUDB)
This is the the top of the paper detection signal.
[L]: Top of the paper detected
[H]: Top of the paper not detected

b. Output signal

(1) LCT-OUT1 (ADUDB → M102)
(This is the 24V DC power supply line for M102.)

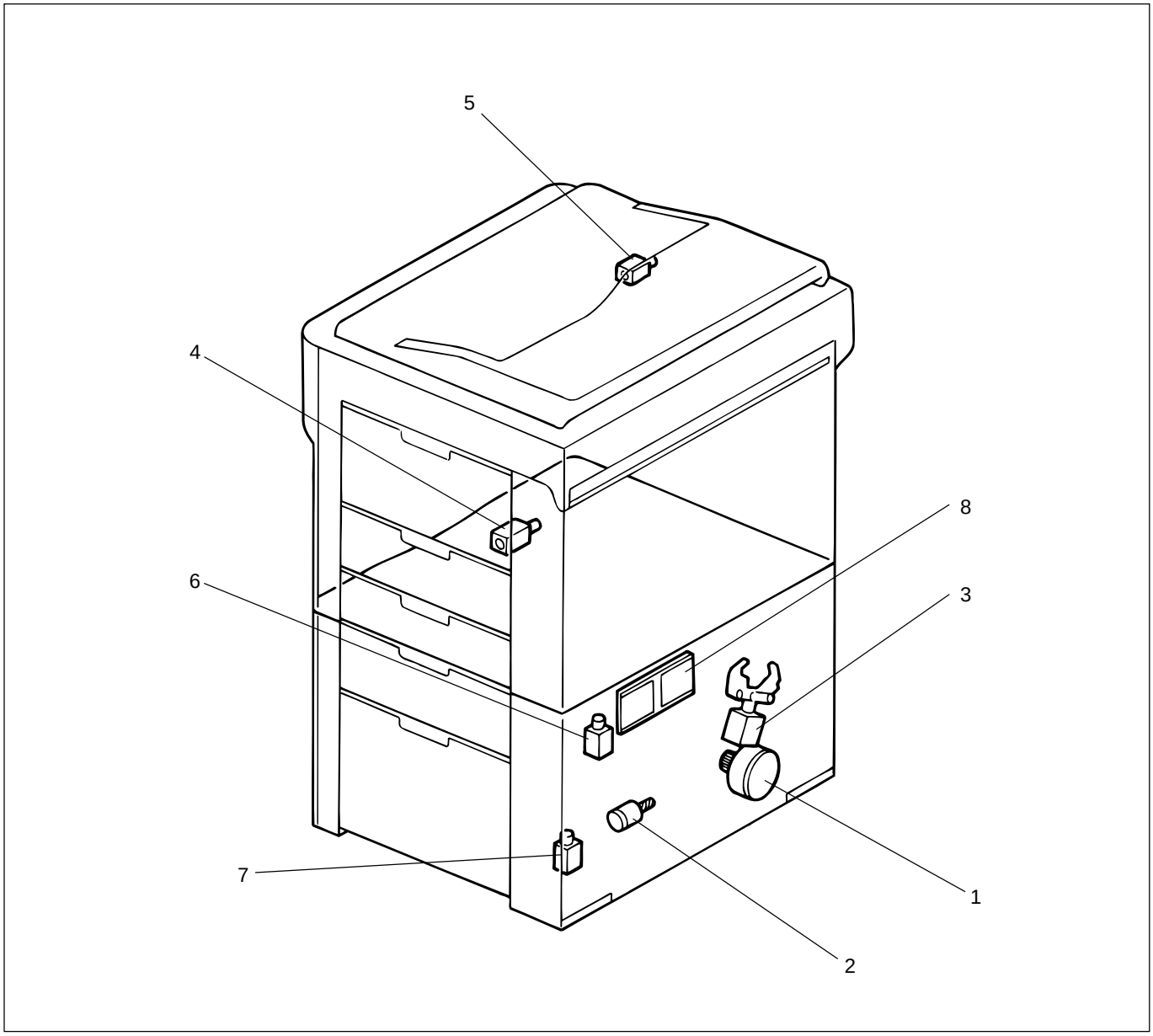
(2) LCT-OUT2 (ADUDB → M102)
This is the 24V DC power supply line for M102.
[L] : M102 ON
[H] : M102 OFF

DB-307/107/607 ELECTRICAL PARTS LAYOUT DRAWING



1. Switches and sensors

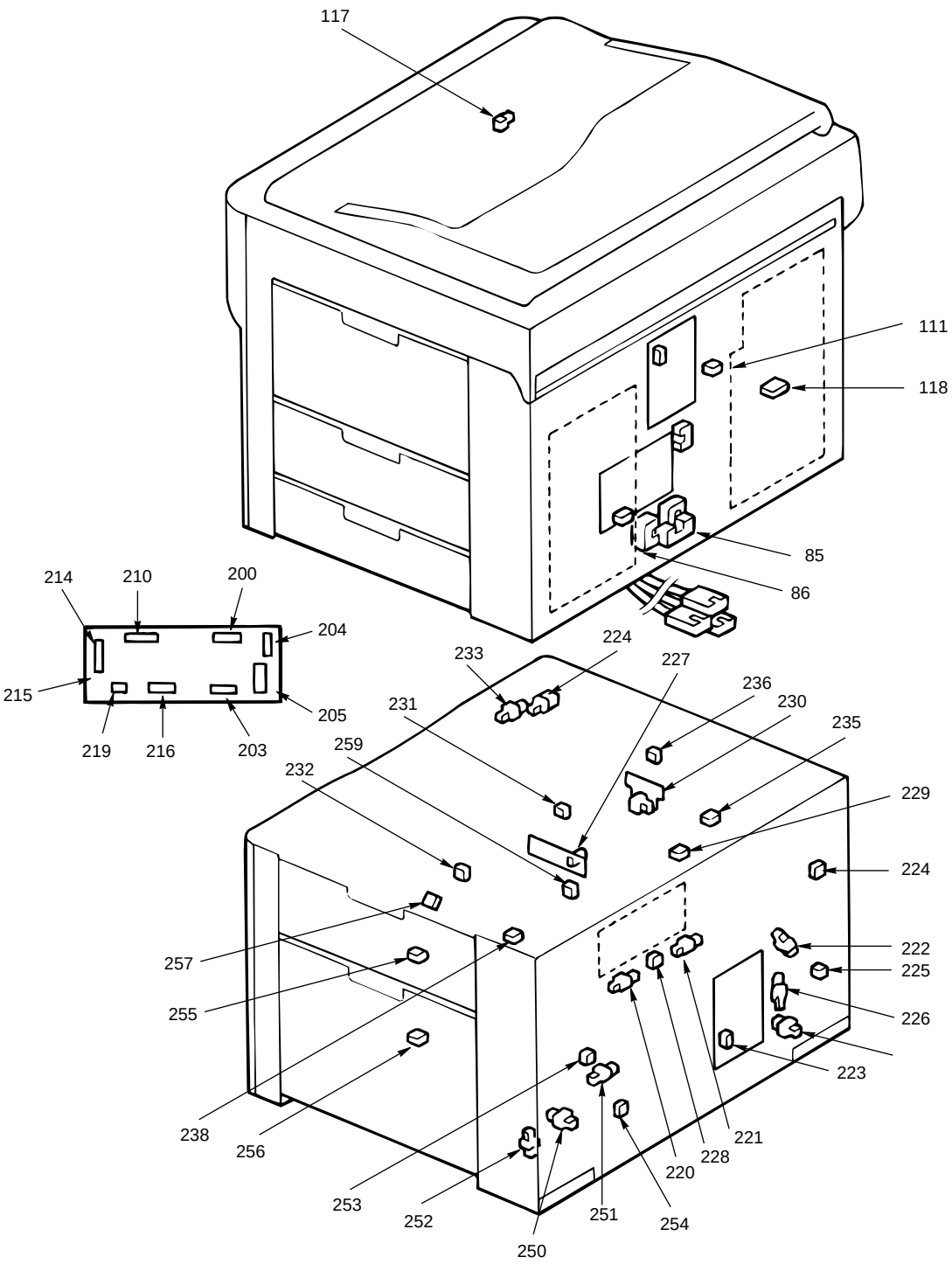
1	MS101	ADU front door inter lock switch (DB-307/107)
2	MS102	ADU lower conveyance door inter lock switch (DB-307/107)
3	PS101	ADU paper conveyance 1 PS (DB-307/107)
4	PS102	ADU paper exit PS (DB-307/107)
5	PS103	ADU paper feed PS (DB-307/107)
6	PS104	ADU papaer conveyance 2 PS (DB-307/107)
7	PS105	ADU paper conveyance 3 PS (DB-307/107)
8	PS106	ADU cam PS (DB-307/107)
9	PS107	ADU roller PS (DB-307/107)
10	PS108	ADU front door PS (DB-307/107)
11	PS109	ADU paper HP PS (DB-307/107)
12	PS1010S	ADU no paper detection PS (DB-307/107)
13	PS1010L	ADU no paper detection PS LED (DB-307/107)
14	PS110	LCT upper limit PS (DB-307/607)
15	PS111	LCT paper feed PS (DB-307/607)
16	PS112	PFU paper feed PS (DB-307/607)
17	PS113	PFU conveyance PS (DB-307/607)
18	PS114	LCT PS (DB-307/607)
19	SSB110	PFU paper size detection board (DB-307/607)

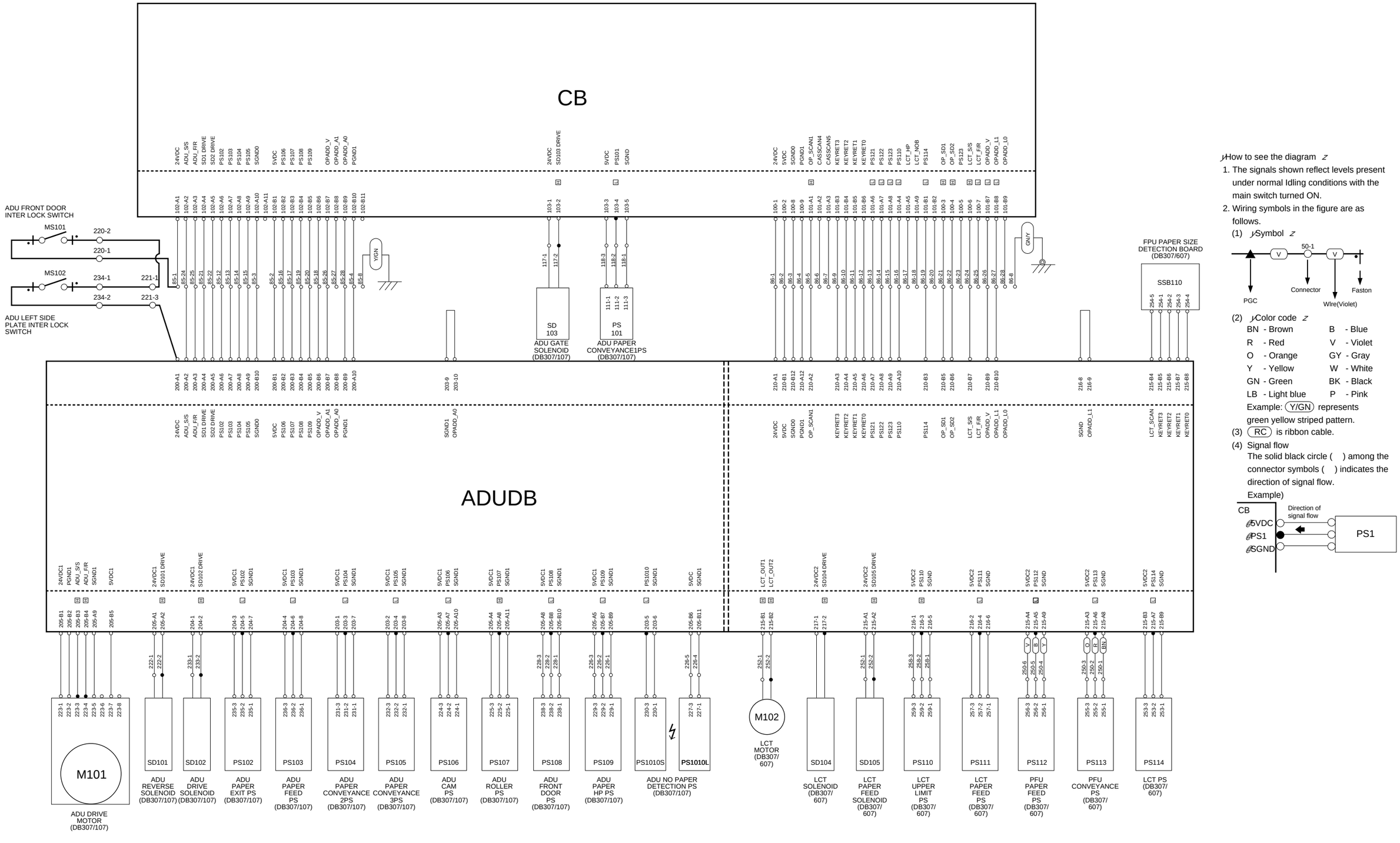


2. Motors, solenoids, lamps, heaters, and board

1	M101	ADU drive motor (DB-307/107)
2	M102	LCT motor (DB-307/607)
3	SD101	ADU changeover solenoid (DB-307/107)
4	SD102	ADU drive solenoid (DB-307/107)
5	SD103	ADU gate solenoid (DB-307/107)
6	SD104	LCT solenoid (DB-307/607)
7	SD105	LCT paper feed solenoid (DB-307/607)
8	ADUDB	ADU drive board (DB-307/607)

DB307/107/607 CONNECTOR LAYOUT DRAWING





How to see the diagram

1. The signals shown reflect levels present under normal Idling conditions with the main switch turned ON.
2. Wiring symbols in the figure are as follows.
   (1) Symbol

   (2) Color code

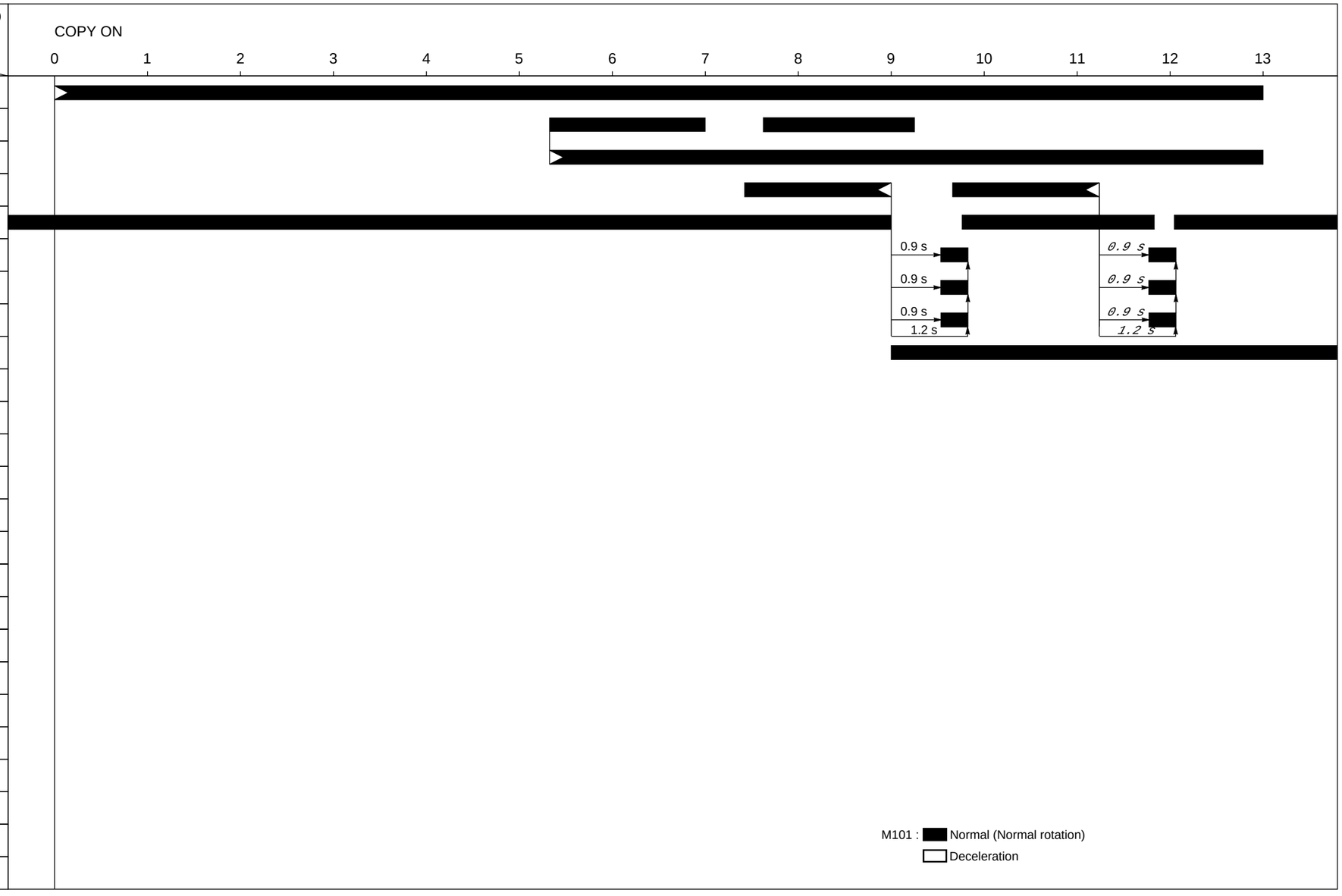
BN	- Brown	B	- Blue
R	- Red	V	- Violet
O	- Orange	GY	- Gray
Y	- Yellow	W	- White
GN	- Green	BK	- Black
LB	- Light blue	P	- Pink

   Example: (Y/GN) represents green yellow striped pattern.

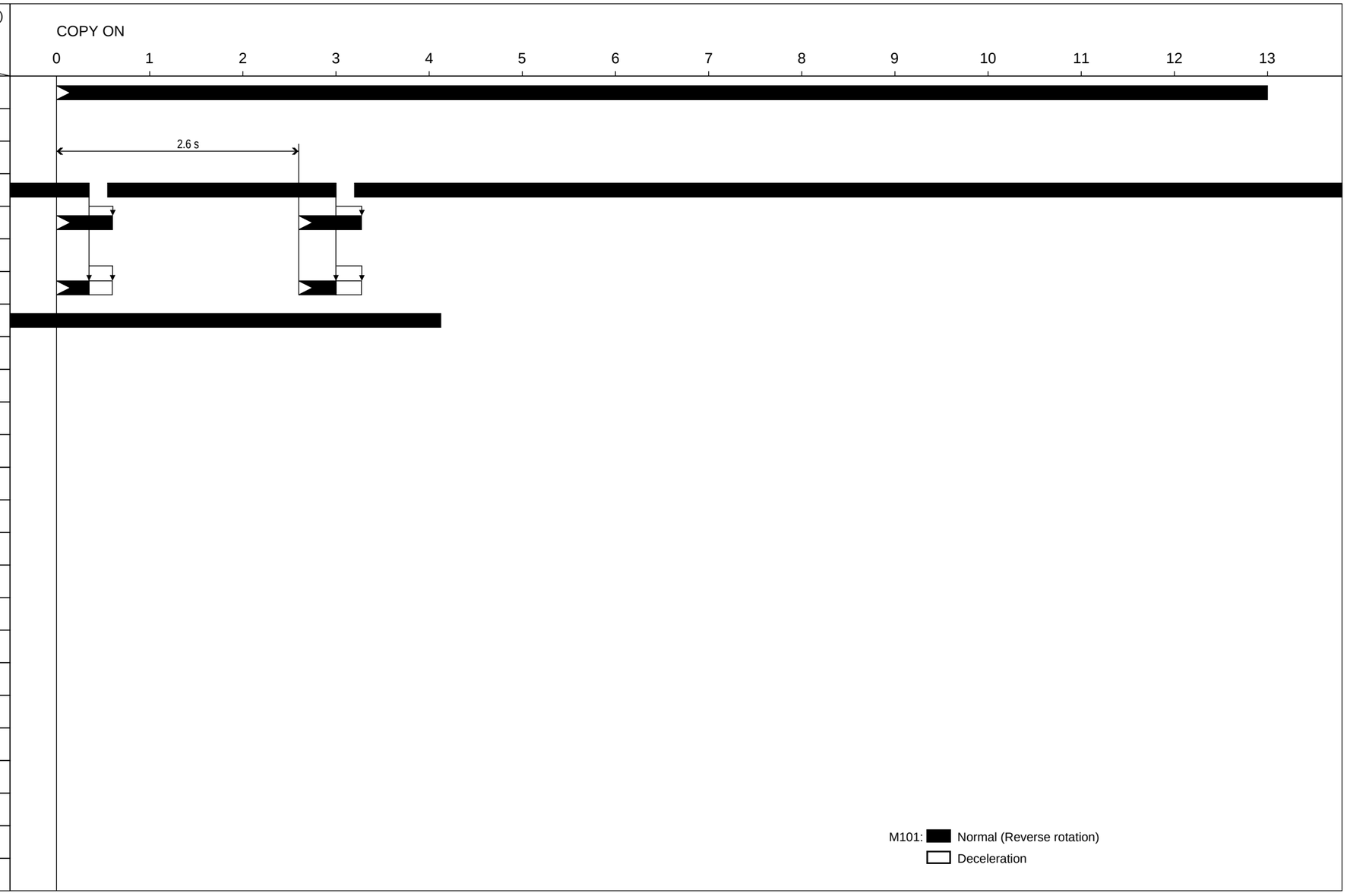
   (3) (RC) is ribbon cable.

   (4) Signal flow
   The solid black circle ( ) among the connector symbols ( ) indicates the direction of signal flow.
   Example)

Symbol	Item \ Time (sec)
M1	Main Motor
PS8	Paper Exit PS
SD103	ADU Gate Solenoid
PS101	ADU Paper Conveyance 1 PS
PS106	ADU Cam PS
SD101	ADU Changeover Solenoid
SD102	ADU Drive Solenoid
M101	ADU Drive Motor
PS1010	ADU No Paper Delection PS



Symbol	Item / Time (sec)
M1	Main Motor
SD103	ADU Gate Solenoid
PS101	ADU Paper Conveyance 1 PS
PS106	ADU Cam PS
SD101	ADU Changeover Solenoid
SD102	ADU Drive Solenoid
M101	ADU Drive Motor
PS1010	ADU No Paper Detection PS



Symbol	Item (Time(sec))
M1	Main motor
M2	Optics Drive
	Optics F/R
PS4	Optics Home Position Sensor
M6	Optics Brake Sensor
L1	Exposure Lamp
BIAS	Bias
CEL	Charge Elimination LED
PCL	PCL
HV	Charge
	Transfer/Separation
SD1	Upper Paper Feed SD
SD3	Regist SD
PS1	Upper Paper Feed PS
PS3	Rre-shutter Sensor
PS8	Exit Detecting Sensor

MAIN DIFFERENCE LIST BETWEEN konica 1120 AND konica 2223

This machine has been designed based on the konica 1120 machine. The main differences between the konica 1120 and the konica 2223 are listed below.

[1] Product Specifications

Type	1120	2223	Reasons
Specifications	1. Copy speed 20 sheets (A4) 11 sheets (A3)	 23 sheets (A4) 12 sheets (A3)	 CPM change
	2. First copy time 6.5 sec. (A4)	 5.8 sec. (A4)	 CPM change
	3. Photograph mode Not used	 Used	 To improve function
	4. Energy conservation Pre-heat mode	 Power save mode	 To respond to Energy Star
	5. Binding margin shift Life-size only	 Life-size and reduction	 To improve function
	6. Platen auto start Not used	 Used	 To improve function
	7. Options (1) ADF DF-204 (2) Sorter ST-102, ST-210 (3) Drawer base unit DB-205A (two PFU) DB-205B (three PFU) (4) Pedestal	 DF-204, DF-308 ST-103, ST-104, ST-216 DB-307 (LCT+PFU+ADU) DB-607 (LCT+PFU) DB-107 (ADU) Pedestal	 To fill up options
	8. Maintenance Maintenance: Every 30,000 copies Machine service life: 400,000 copies or 5 years	 Every 45,000 copies 600,000 copies or 5 years	 To improve serviceability CMP change
	9. Copy materials Drum: Common with 1015 Developer: Exclusively for 1120 Toner: Exclusively for 1120	 Common with 1015, 1120 Exclusively for 2223 Exclusively for 2223	 CMP change

[2] Mechanism

Type	1120	2223	Reasons
Operation section	1. Operation panel LED indication	LCD panel	To improve operationability
Drive section	1. Drive method Whole main motor drive	Separated driving into main motor and drum motor	Adoption of drum drive motor to improve material durability and stability
Optics section	1. Optics mirrors (1st to 4th mirrors) Sensitization mirror	hypersensitization mirror	To improve function
	2. Inside cooling Exhaust cooling by cooling fan	Exhaust cooling by radiation shutter and cooling fan	
Drum unit section	Auxiliary separation Separation craws:3	Separation craws:5	To improve separation performance
Fixing section	1. Cleaning roller Driven by upper fixing roller	Independent driven cleaning roller	To improve cleaning performance
	2. Sensor cleaning blade Material:Heat resisting rubber	Material:PFA resin	To respond to market technology

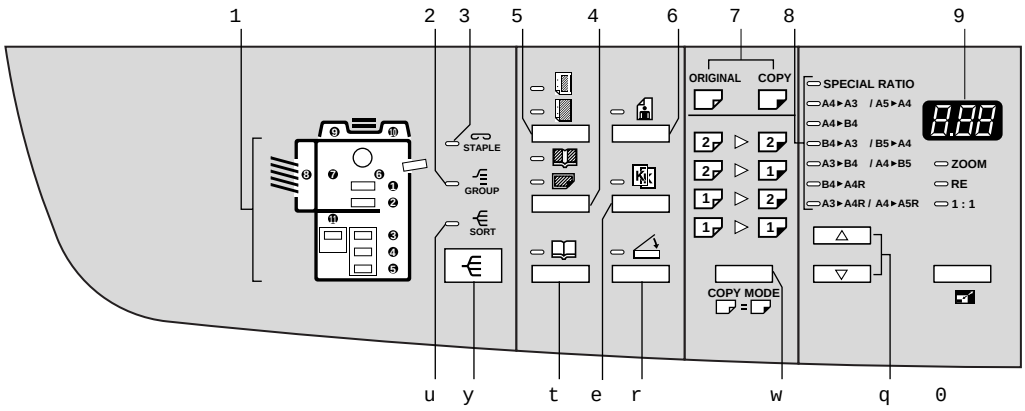
[3] Electrical Control

Type	1120	2223	Reasons
Drive section	1. Drum drive Common drive to paper feed/ developing/fixing	Newly added exclusive drum developing drive motor	To improve developer and drum durability
Optics section	1. Optics motor DC brushless motor	DC pulse motor	To improve image guality To simplify control circuit
	2. Optics brake PS/Optics overrun PS Used	Not used	By pulse motor adoption
	3. Main body cooling fan	Exclusive	To improve performance
	4. Radiation solenoid Not used	Newly added	To prevent machine inside temperature from rising
Operation section	1. Operation board	Exclusive (Right board/Left board)	To respond to functional expansion
Paper feed section	1. Resist solenoid	Exclusive	To improve performance
Drum carriage unit	1. PCL board	Exclusive	To respond to higher CPM
	2. Charge correction board	Exclusive	To respond to photograph mode
Fixing section	1. Fixing sensor/1	Exclusive	To improve performance

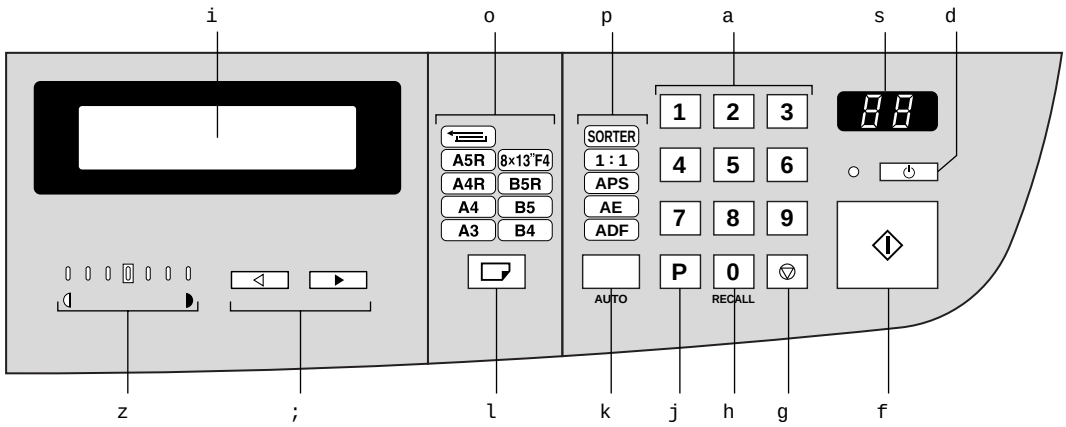
[3] Electrical Control (continued)

Others	1. High voltage power supply	Exclusive	To respond to higher CPM
	2. Power supply board	Exclusive	To respond to higher CPM and functional expansion (ADU)
	3. Control board	Exclusive	To respond to higher CPM To respond to functional expansion
	4. ROM1/ROM2	Exclusive	To respond to higher CPM To respond to functional expansion

OPERATION PANEL



No.	Name	Function
1	Paper feed/Paper jam indicator	Indicates the selected section for paper feed (steady indication) and also indicates the location of a paper jam as a number (blinking indicator). When the tray has no paper, the indicator blinks. When a paper jam occurs during continuous copies using ADF, either ❶ or ❷ indicator will light.
2	Group indicator	Indicates that the group mode has been selected (steady indication).
3	Staple indicator	Indicates that the staple mode has been selected. (Steady indication)
4	Fold erase/Frame erase button	Used to select the fold erase/frame erase mode.
5	Shift/Reduction shift button	Used to select the shift mode or reduction shift mode.
6	Photograph mode button	Used to select the photograph mode.
7	Copy mode indictor	Indicates the selected copy mode (steady indication).
8	Fixed magnification indicator	Indicates the selected fixed magnification (steady indication).
9	Magnification display	Indicates the selected magnification.
0	Magnification mode button	Used to select the magnification mode.
q	Reduction and Enlargement button	Used to select the copy magnification.
w	Copy mode button	Used to select a two-sided (one-sided) original/duplex (one-sided) copy mode.
e	OHP interleave button	Used to select the OHP interleave mode.
r	Auto start button	Used to select the platen auto start mode (steady indication).
t	Book copy button	Used to select the book copy mode.
y	Sorter button	Used to select the sort, group or staple mode.
u	Sort indicator	Indicates that the sort mode has been selected (steady indication).



i	LCD(liquid crystal display) panel	Displays the messages for operations or machine's conditions.
o	Paper size indicator	Indicates the selected paper size (steady indication. When there are no papers or no tray, it will blink.).
p	Auto indication	Indicates the selected auto mode (steady indication).
a	Copy quantity setting buttons	Used to set the copy quantity and code of self diagnostics and input/output checks.
s	Copy quantity indicator	Indicates the set copy quantity and also the ongoing copy count during a copy operation.
d	Power save button	Used to enter the power save mode.
f	Copy button	Used to start copy operation, register latch operation, start self diagnostics, and write data on the static RAM(non-volatile). This indicator lights in green when copy operation can be performed and in amber when the machine is in warm-up, the lens is moving, or an abnormality occurs.
g	Stop/Clear button	Used to stop a copy operation, cancel the set copy quantity, stop self diagnostic sequence,or indicate the drum counter in combination with the P button.
h	Recall button	Used to check the set copy quantity during a copy operation.
j	P button	Used to read each setting and count.
k	Auto button	Used to select the sorter, 1:1, AE, APS, or ADF mode.
l	Paper size button	Used to select the paper size (paper tray).
;	Copy density button	Used to select the copy density (AE is cancelled).
z	Copy density indicator	Indicates the selected copy density (steady indication).

COPY OPERATION

[1] Book copy mode

This mode allows you to copy left and right pages of a book on different sheets in one operation.

1. Size of paper assured in this mode

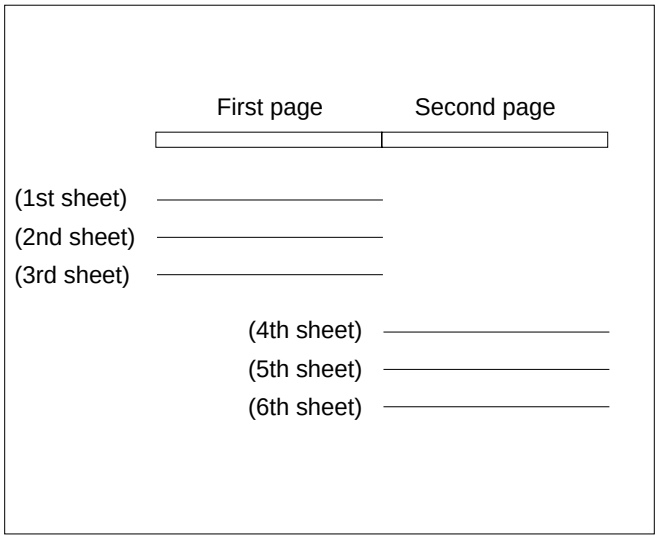
A4 and B5

* All paper sizes can be selected for copying without assurance if you want.

2. Operation when copying in several sheets

When copying one original in several sheets, the first page of the original is copied in the set copy quantity, then the second page will be copied in the same quantity.

The illustration below is the scanning example using the book copy mode in 3 copies.



3. Additional function

a. AE function

Before copying in the book copy mode, the AE scanning will be performed as it is done in the ordinary copy mode. Also, when using the book copy mode for several sheets, the toner density can be controlled under the scanning data of the first page obtained at the copy start.

b. Image Shift

When using the book copy mode with the image shift mode, a margin of approx. 10mm will be made on the lead edge of the image of both pages for binding.

4. Book copy mode using multi bypass feed tray

The second paper feed timing is determined automatically when the A4 paper size is selected using the paper size button.

Note: The Value of factory setting is A4.

5. Book copy mode using a sorter

a. At sort mode

The bin is moved whenever each copy of the first and second pages is exited.

b. At group mode

The bin is moved when the copies of first page have been copied to exit the copies of second page into the next bin.

Note: The bin can store the following:
50 copies (at sort mode)
30 copies (at group mode)
Above is the same when the ordinary copy operation will be performed.

6. Restriction

- The book copy function is compatible with the ×0.86, ×1.15 and ×1.00 modes.
- The book copy function is not compatible with the fold erase mode, OHP interleave mode and mixed original mode.
- The book copy function is not compatible with the ADF selection.
- APS and AMS can not be selected.

[2] OHP interleave mode

When copying on OHP films, this mode is used for copying the same originals also on copy papers.
Copying is made one by one in the order “copy paper”→ “OHP film”.
Under the OHP interleave mode, copying is made for the size of selected tray paper regardless of OHP film size.

1. Setting method

Press the OHP interleave button.

2. Restriction

a. An OHP film is accepted only by the by-pass feed tray, and two or more sheets of OHP films can not be set simultaneously.

b. The OHP interleave button is not accepted in interruption copying.

c. Following modes and buttons are not accepted while the OHP interleave mode is selected.
- Copy quantity setting button
- Sorter button
- Book copy button
- One-sided→two-sided, two-sided→two-sided mode selection with the copy mode button.

3. Cancellation method

OHP interleave mode can be canceled when any of the following conditions is satisfied.
- When the OHP interleave button is selected again
- When the auto reset button is selected again
- When the auto reset operates
- When the auto shut off operates
- When one-sided→two-sided, or two-sided→two-sided mode is selected with the copy mode button.

[3] Photograph original mode

This mode is used to improve the reproduction of photograph originals (halftone originals). The LED lights when the photograph mode is selected by pressing the photograph mode button.

1. Setting and cancelling method

Press the photograph mode button.

[4] Platen auto start mode

In this mode, copy operation starts when the original cover or ADF is closed. The LED lights when the platen auto start mode is selected by pressing the auto start button.

1. Setting and cancelling method

Press the auto start button.

2. Restriction

a. The platen auto start mode is canceled when following conditions are selected.
- ADF mode is selected.
- Mixed original mode is selected.
- The auto start button is pressed when the platen auto start mode is selected.
- The auto reset button is pressed or auto reset is functioned.

b. The platen auto start mode can not be selected when following condition.
- Original is set in ADF.

VARIOUS SETTINGS

[1] Setting an arbitrary magnification

In addition to the fixed magnification, an arbitrary magnification is set and stored. The setting range of arbitrary magnifications to be set is from 0.50 to 2.00.

1. Setting method

(1) While pressing the P button, press the Enlargement "▲" or the Reduction "▼" button.
(2) Set the magnification by pressing the Enlargement "▲" button or the Reduction "▼" button.
(3) Press the P button. When canceling the setting, press the Auto Reset button.

Note: The value of factory setting for an arbitrary magnification is 2.00.

[2] Selecting the Maximum/Minimum Magnification

The maximum magnification (2.00) or the minimum magnification (0.50) can be selected with the P button.

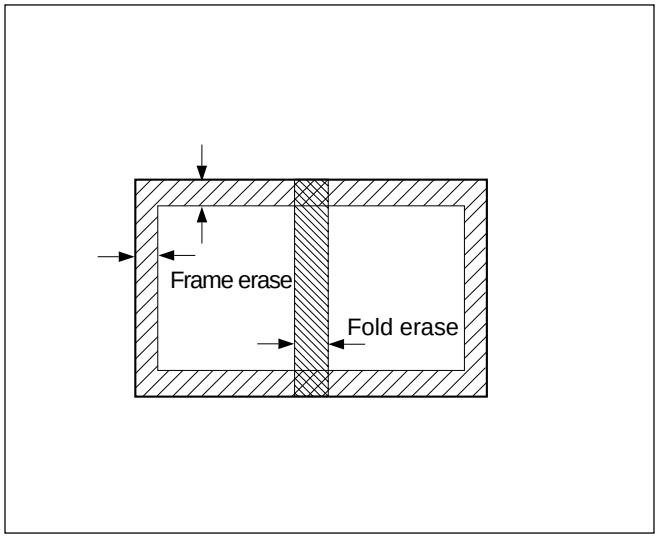
1. Setting method

a. When selecting the maximum magnification (2.00)
While pressing the P button, press the Enlargement "▲" button.

b. When selecting the minimum magnification (0.50)
While pressing the P button, press the Reduction "▼" button.

[3] Frame Erase/Fold Erase Width Settings

Set the erase width as shown in the illustration below when making a copy in the fold erase and/or frame erase mode.



1. Fold erase and frame erase width

The erase width values to be set are shown in the table below.

Frame erase	5	10	15
Fold erase	10	20	30

Unit(mm)

Note: The standard frame erase width is 5 mm and the standard fold erase width is 10 mm.

2. Setting method

(1) Press the fold erase/frame erase button. The LED for the frame erase will light and the frame erase setting mode will be selected. The old data is displayed in the LCD panel.
(2) Press the P button.
The frame erase LED will brink and frame erase width value selecting screen will appear.

Note: Frame erase mode can not be obtained if the P button is not pressed within ten seconds after selecting mode.

(3) Enter the frame erase width value using the copy quantity setting buttons.
(4) Press the P button.
The frame erase width value is set.
(5) Press the fold erase/frame erase button.
The fold erase LED will light and the fold erase setting mode will be selected. The old data is displayed in the LCD panel.
(6) Press the P button.
The fold erase LED will brink and fold erase width value selecting screen will appear.

Note: Frame erase mode can not be obtained if the P button is not pressed within ten seconds after selecting mode.

(7) Enter the fold erase width value using the copy quantity setting buttons.
(8) Press the P button
The fold erase width value is set and the fold erase setting mode will be canceled.

Note: When the value other than one to be set has been set, the input value is raised or rounded off as below.

Item	Input value	Set value
Frame erase width	0~9	5
	10~14	10
	more than 15	15
Fold erase width	0~19	10
	20~29	20
	more than 30	30

Unit(mm)

3. Size of paper on which frame erase and fold erase can be performed

The table below displays the sizes of paper on which the frame erase and the fold erase functions can be used.

Frame erase	A3, B4, A4R, B5R, A4, B5, A5, 8.4 × 14, 8.5 × 11R, 8.5 × 11
Fold erase	A3, B4, A4R, B5R, 8.5 × 11R

Note: When the frame erase and fold erase are selected at the same time, the size of paper for the fold erase function can be selected.

[4] Setting the Auto Reset

The auto reset function returns to the initial settings when no buttons are pressed during a fixed time period.

(1) The following setting for the auto reset time can be performed.
0 : No auto reset
1 : Auto reset (90 seconds)

For the setting procedure, refer to 25 mode in the Diagnostics section for details.

COUNT CONFIRMATION

[1] PM Count

(1) While pressing the P button, press the 5 copy quantity setting button.
- The PM count value, a number of six figures, will appear on the LCD panel.
- The PM count value, a 2-digit number, will appear on the copy quantity indicator.

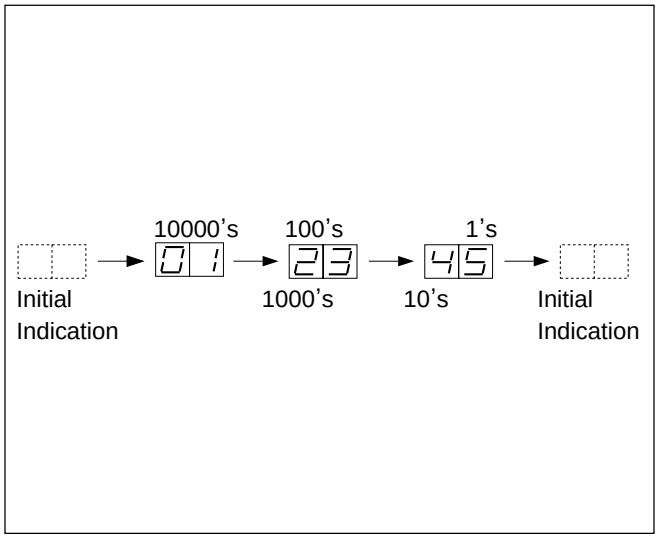
The PM count value is the 2-digit number × 1000.

(2) For the resetting procedure, refer to “Checking and Resetting the PM Counter” in the adjustment section.

[2] Drum Count

(1) While pressing the P button, press the “7” button.
- The drum count value, a number of six figures, will appear on the LCD panel.
- The drum count value will appear on the copy quantity indicator. This will be displayed two digits at a time, in sequence, on the copy quantity indicator.

Example: When the drum count is set to 12,345



(2) For the resetting procedure, refer to “Checking and Resetting the Drum Counter” in the adjustment section.

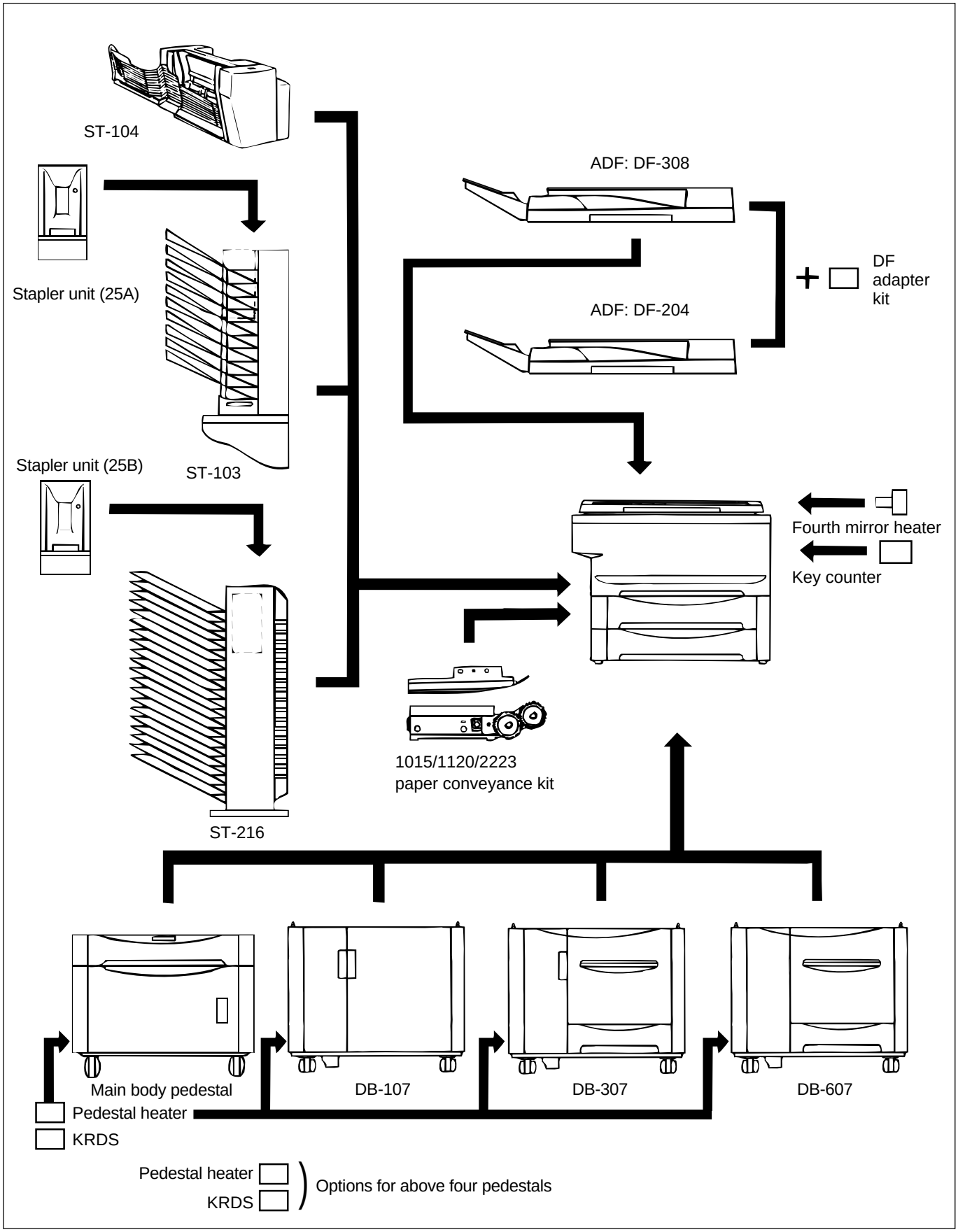
[3] Double Count Specification for A3 Copies

This setting allows the following counters to perform 2 counts when A3 sized paper is selected as copy paper.

- Total counter (Hardware and software)
- Key counter
- PM counter
- Copy counter
- Drum counter

(1) Select “0” , “1” , or “2” on 25 mode, address P50.
0 : 1 count
1 : 2 counts [trays (except universal, and bypass tray]
2 : 2 counts (All trays)

SYSTEM OUTLINE



PRODUCT SPECIFICATIONS

[1] Type

Type: Desk top type
Copying method: Indirect static method
Original table system: Fixed type
Photo sensitivity material: OPC
Sensitive method Direct irradiation method
Paper feeding method: Two stacked trays (250 sheets×2,80g/m^2)
Multi bypass feed (50 sheets, 80g/m^2)
DB-307 (1000 sheets/LCT+250sheets/PFU, 80g/m^2)
(Option)
DB-607 (1000 sheets/LCT+250 sheets/PFU, 80g/m^2)
(Option)

[2] Functions

Kinds of originals: Sheets, books, solids
Original size: A3 max.
Copy size: A3-A5R/F4/8×13
Magnification
Fixed magnification: ×1.00, ×0.71, ×0.82, ×0.86, ×1.15, ×1.22, ×1.41
Special ratio magnification: 1mode
Zoom magnification: ×50% to ×200% (1% step)
Warm-up time: Approx. 65 sec. (20°C, rated voltage)
First copy time:

Unit:sec.

Size	A4
Manual /AE mode	5.8

Continuous copy speed:

Unit: copy/minute at life size

Size	A4	A3
Copying speed	23	12

Continuous copies: 1 to 99
Special functions: Auto reset
Auto shut off
Book copy
Image shift/ Reduction shift
Frame erase/Fold erase
OHP Interleave
Photograph mode
Auto copy
Pre-heat function

[3] Copy Paper

Ordinary paper: High quality paper (60g/m^2 to 90g/m^2)
Special paper: Transparencies (specified)
Labels
Blue print master to be deleted

High quality paper (50g/m^2 to 59g/m^2)
High quality paper (91g/m^2 to 130g/m^2)

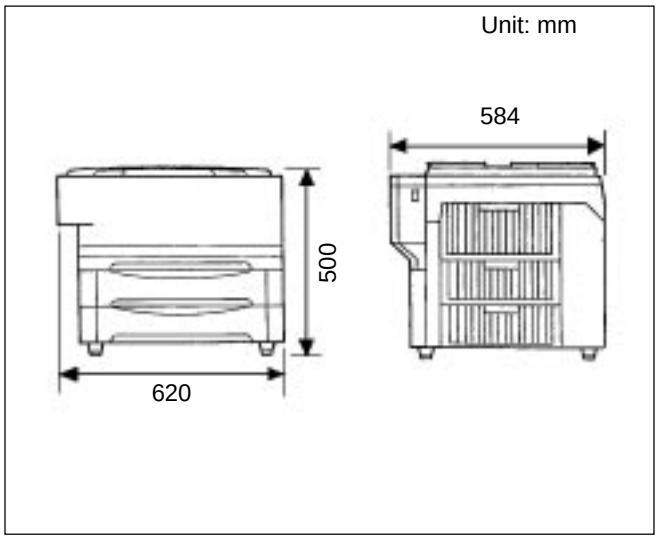
Cautions:
When using special papers:
- Do not use two-sided coping.
- Always feed them using the multi bypass feed tray. (The feed, conveyance, and copy image performance of special papers may sometimes be inferior to that of ordinary paper (60g/m^2 to 90g/m^2).)

[4] Options

ADF: DF-204, DF-308
SORTER: ST-103, ST-104, ST-216
Stapler unit 25A, 25B
Pedestal
Drawer base unit: DB-307 (ADU+LCT+PFU)
DB-107 (ADU)
DB-607 (LCT+PFU)
1015/1120 Paper conveyance kit (for necessary sorter)
DF Adapter kit (for necessary DF-204 and DF-308)
Key counter kit
Fourth mirror heater
Pedestal heater
KRDS

[5] Particulars of Machine

Power requirements: 230 VAC (–14.0% to +6.0%), 50 Hz
Power consumption:1.3 kW
Weight: Approx. 50 kg
Machine dimensions



[6] Maintenance

Maintenance: Every 45,000 copies
Machine service life: 600,000 copies or 5 years

[7] Copy Materials

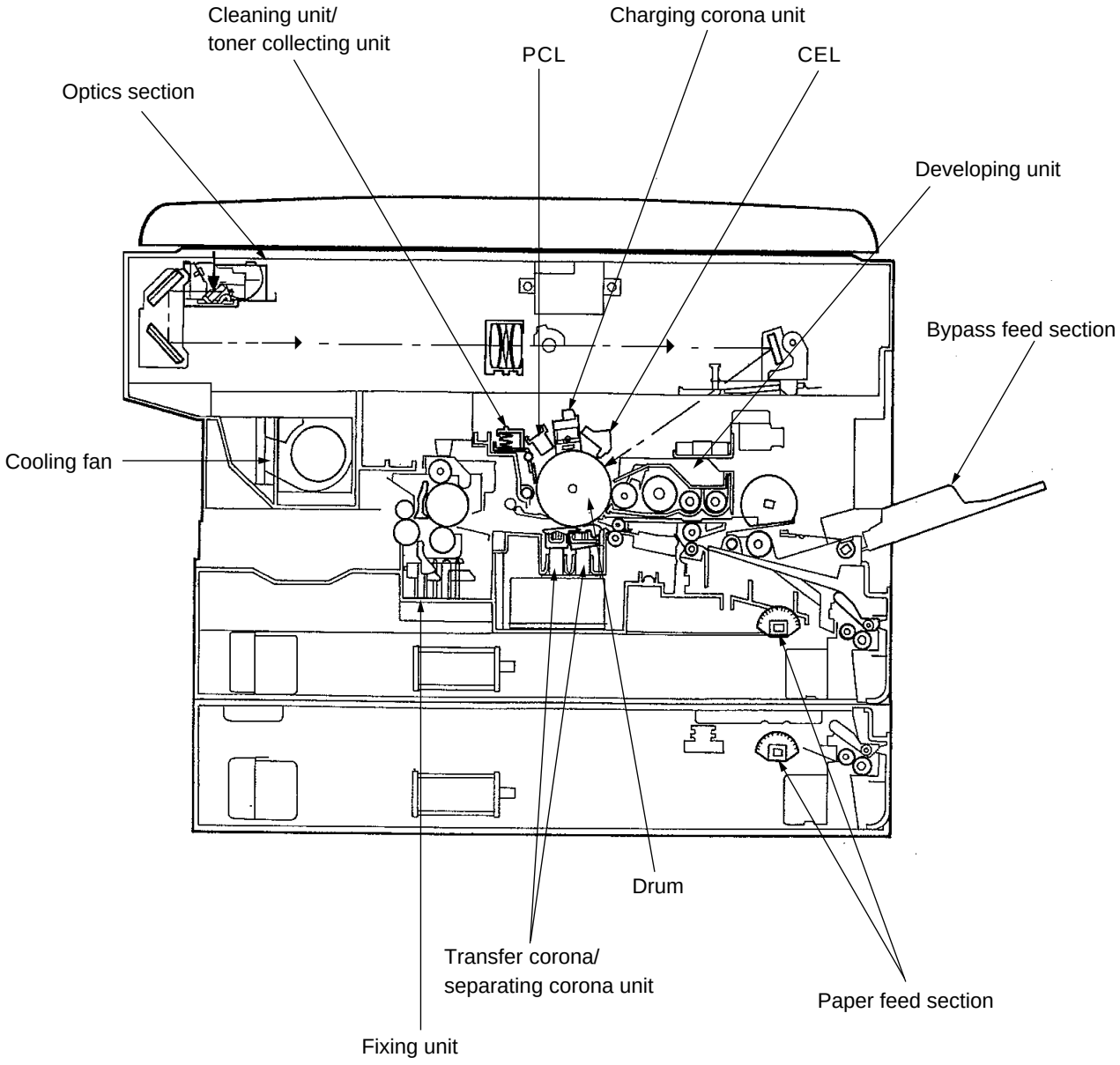
Drum: OPC drum (ϕ60)
Common with Konica 1015,1120
Developer: Exclusive for 2223
Toner: Exclusive for 2223

[8] Machine Operating Environment

Temperature: 10°C to 33°C
Humidity: 10% to 80% RH

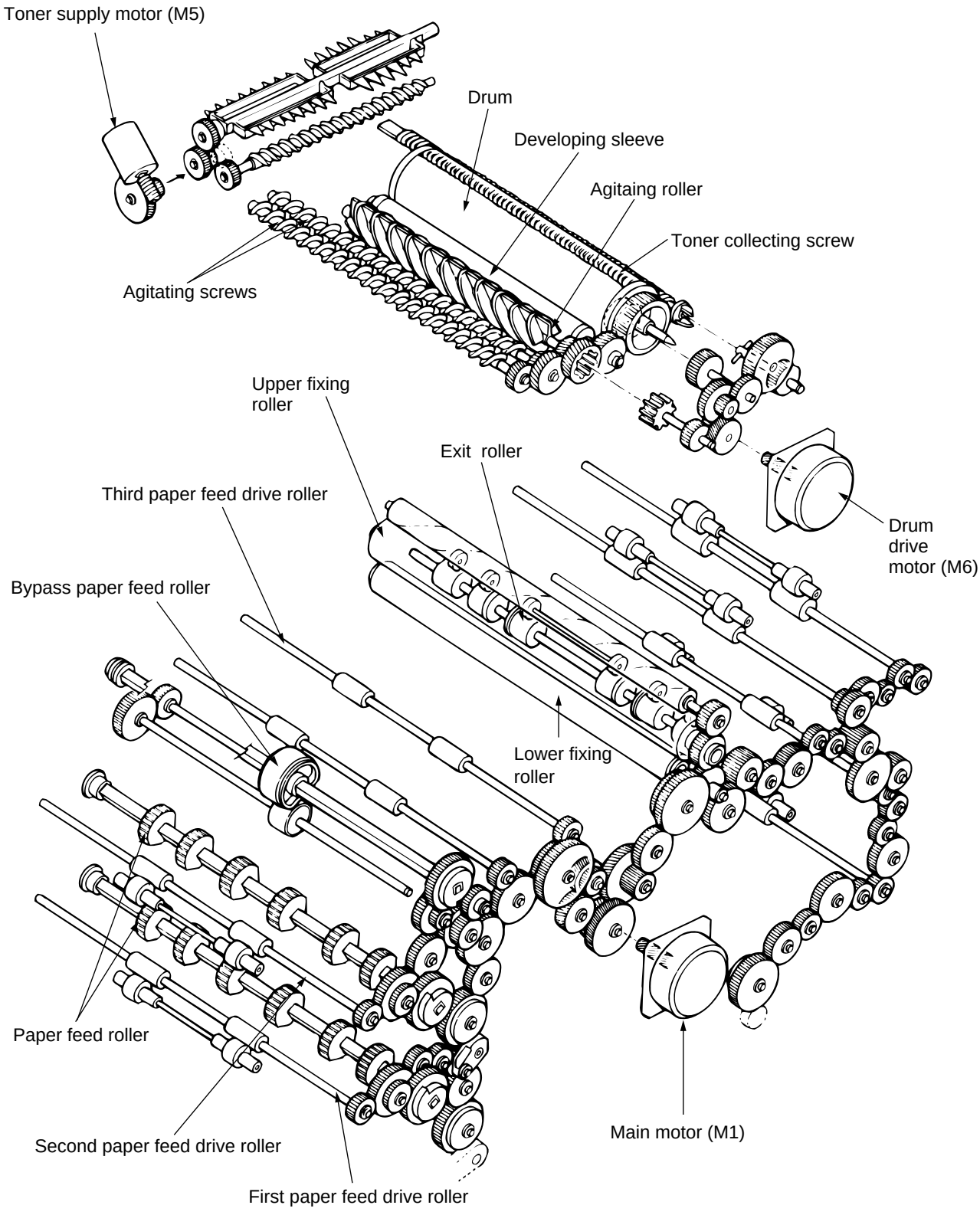
Note: These specifications are subject to change without notice.

CENTER-CROSS SECTION

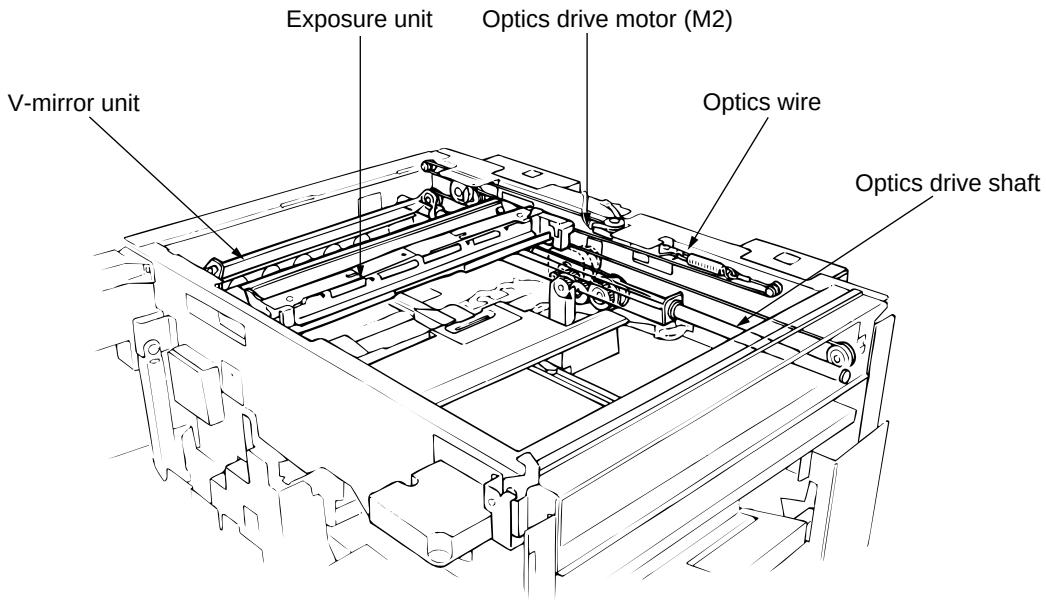


DRIVE SYSTEM DRAWINGS

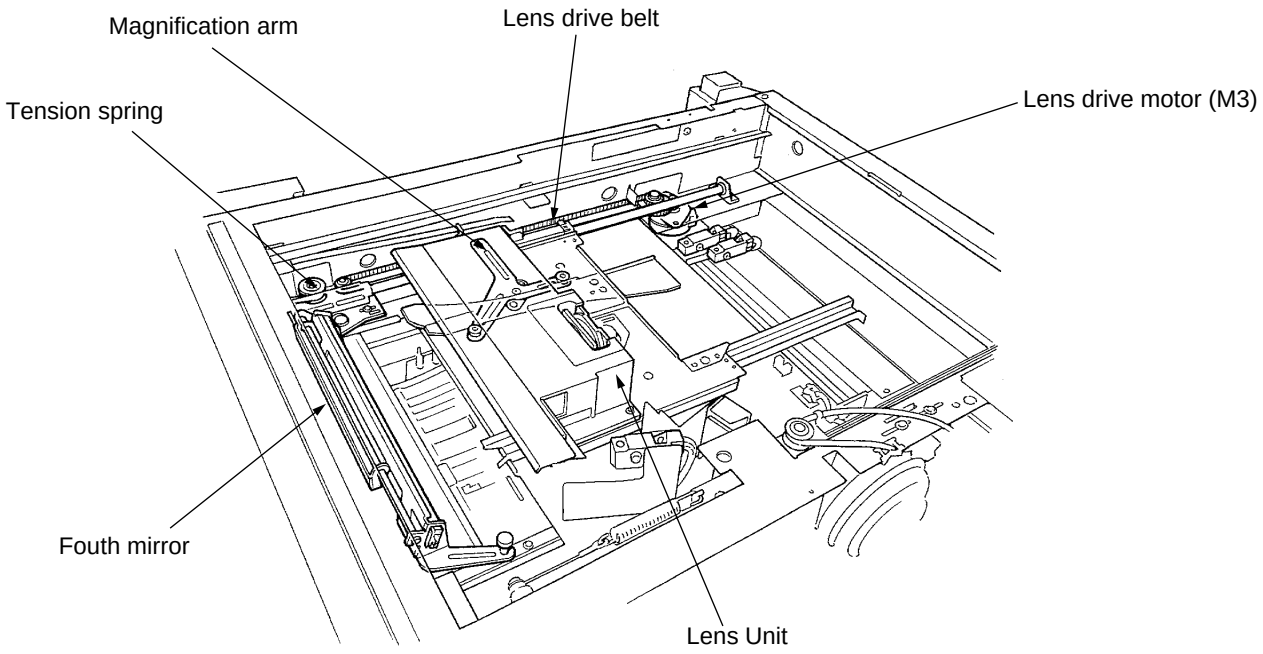
[1] Main/Drum Drive



[2] Optics Drive

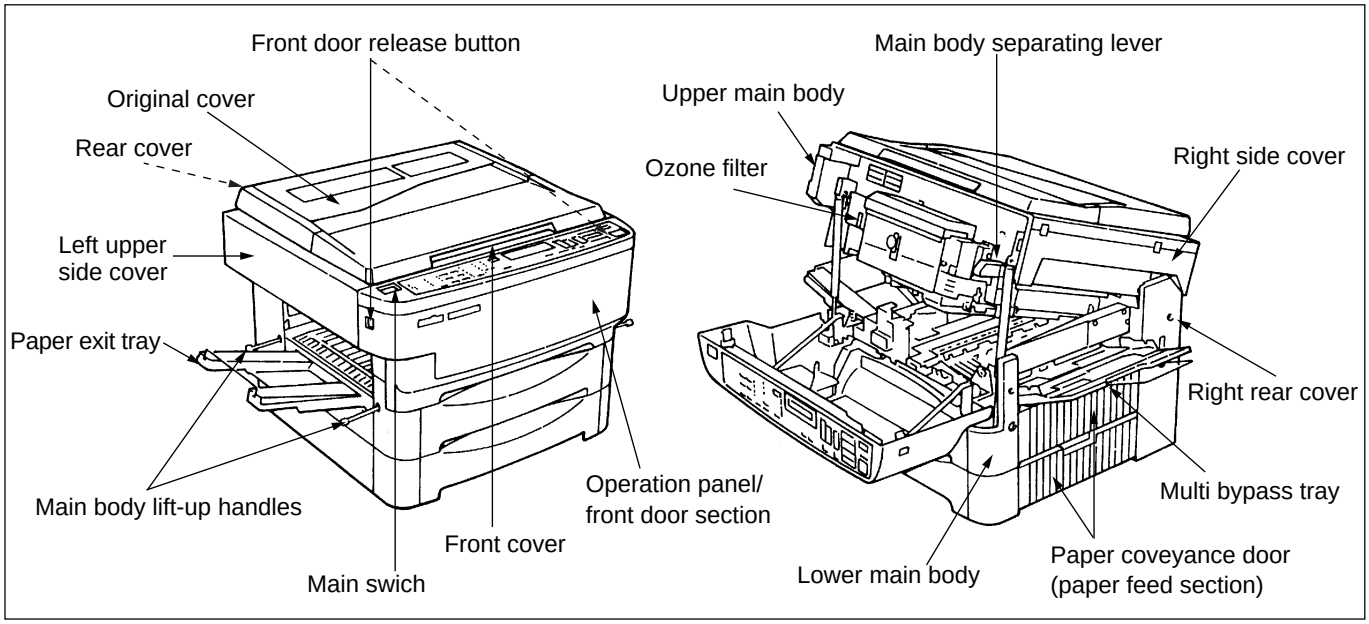


[3] Lens Unit Drive



EXTERNAL SECTION

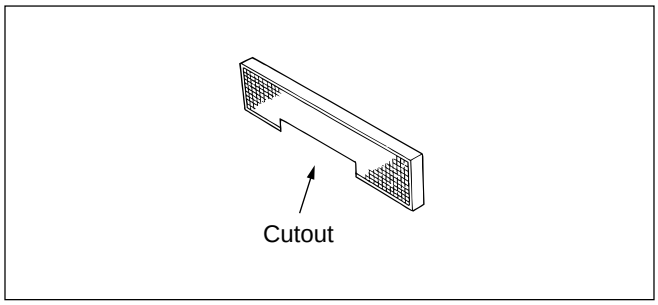
[1] Construction



[2] Disassembly and Assembly

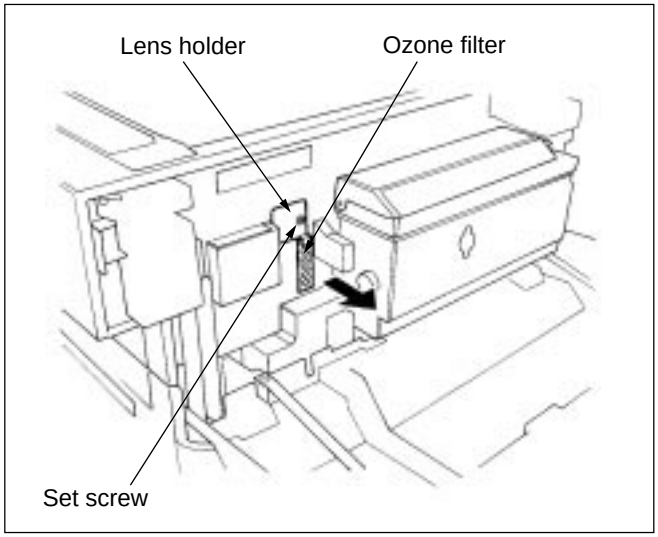
1. Replacing the ozone filter

Caution: Reinstall the ozone filter, securely with its cutout down.



a. Procedure

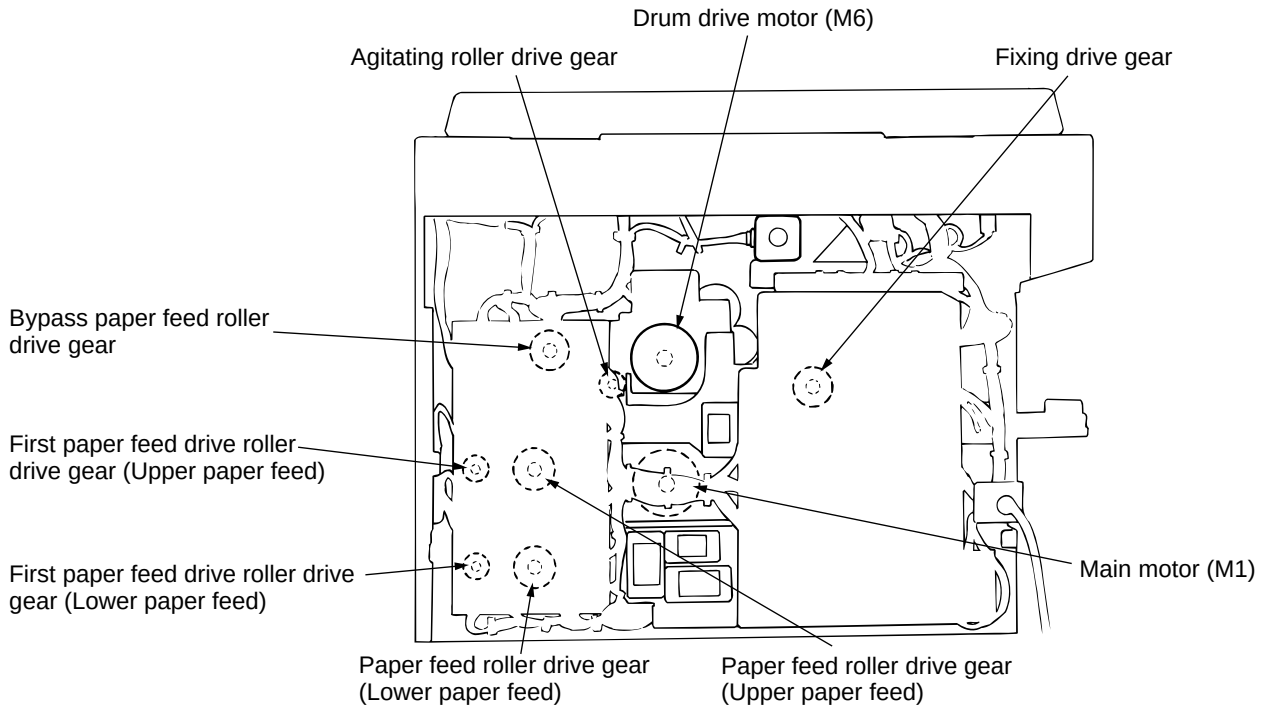
(1) Press the left and right front door release buttons to open the front door.
(2) Remove the set screw, then remove the lens holder.
(3) Pull the ozone filter toward you.



(4) Reinstall the removed parts by reversing the procedure described above.

DRIVE SECTION

[1] Construction



[2] Mechanism

Mechanism	Method
Main motor	Brushless DC motor, outer rotor type
Drum drive motor	Brushless DC motor, outer rotor type
Developing drive	Gear train
Toner collection drive	Gear train
Fixing and paper exit drive	Gear train
Paper feed drive	Gear train

[3] Disassembly and Assembly

1. Removing/reinstalling the main motor/drum drive motor

⚠ Caution:

(1) Never fail to turn off the power source when working on the driving sections.

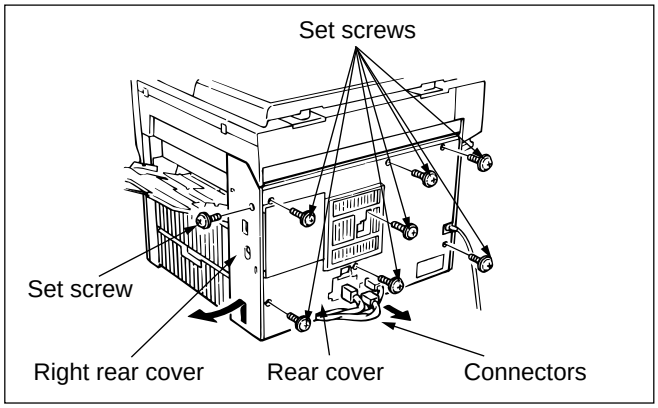
(2) Make sure that all connectors are connected to the control board.

a. Procedures

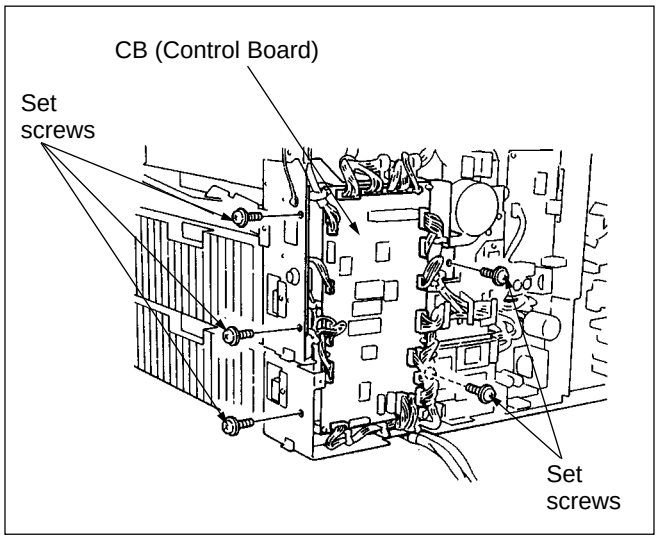
(1) Disconnect the connectors for ADF, SORTER, LCT, ADU, etc.

(2) Remove the rear cover after removing the 7 set screws.

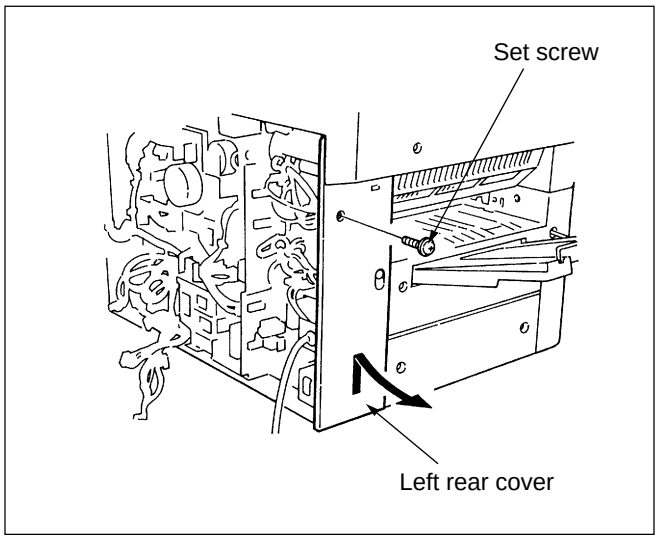
(3) Remove the set screw, then remove the right rear cover by pulling its lower end toward you.



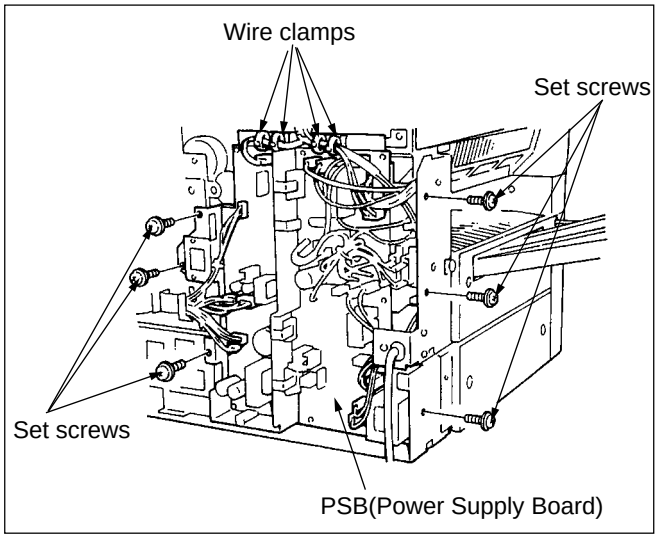
(4) Disconnect all connectors from the CB (control board).
(5) Remove the wire from the wire clamping plates (11 pieces).
(6) Remove the five set screws, then remove the CB.



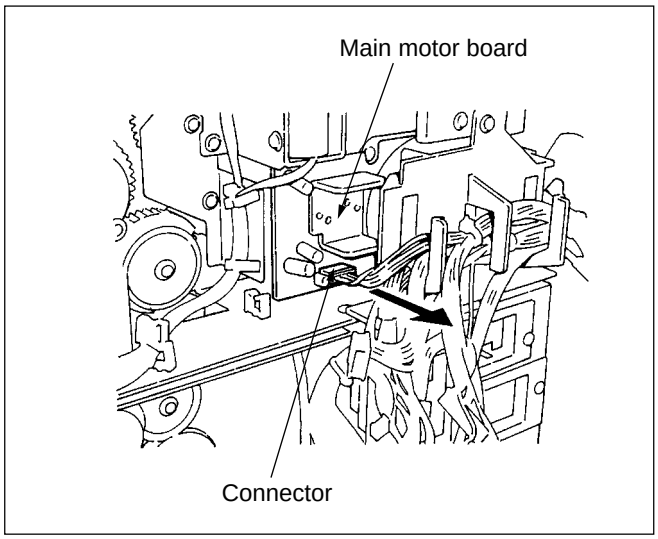
(7) Remove the set screw, release the tab of the left rear cover from the frame, then remove the left rear cover downward.



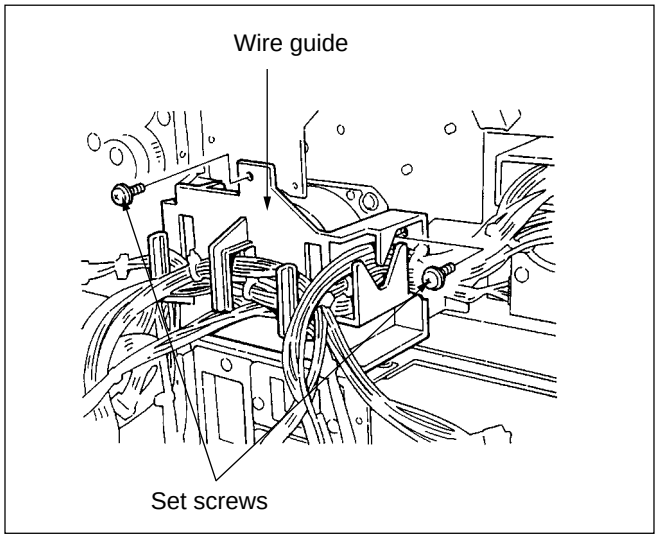
(8) Disconnect all connectors from the PSB (power supply board).
(9) Remove the wires connected to the PSB from the seven wire clamps.
(10) Remove the six set screws, then remove the PSB.



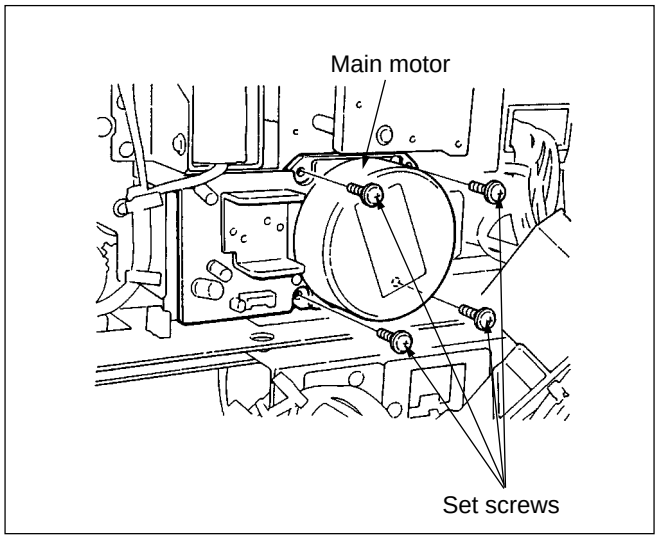
(11) Disconnect the connector from the main motor board.



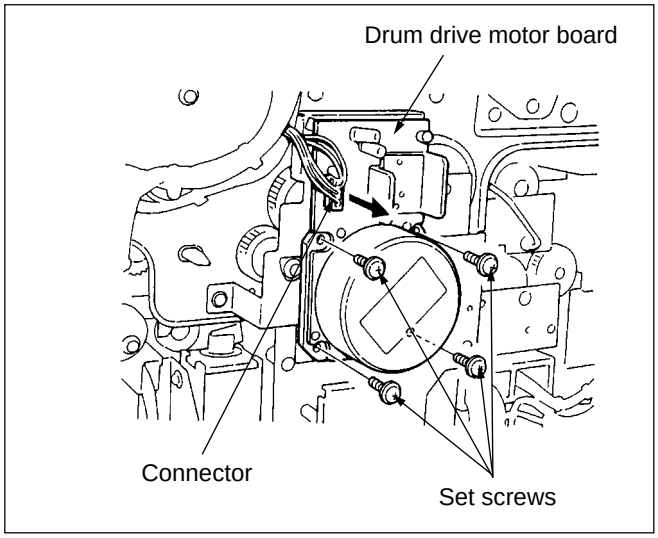
(12) Remove the wires from the wire guide.
(13) Remove the two set screws, then remove the wire guide.



(14) Remove the four set screws, then remove the main motor(M1).

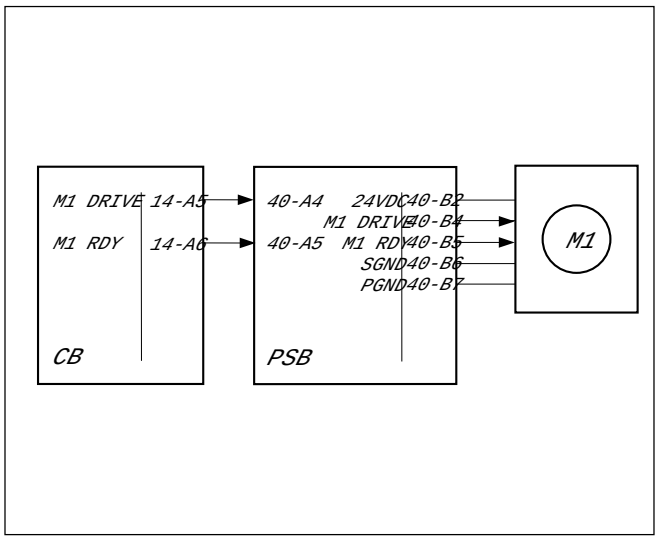


(15) Disconnect the connector from the drum drive motor board.
(16) Remove the four set screws, then remove the drum drive motor (M6).



(17) Reinstall the removed parts in the reverse order of removal.

[4] M1 (Main) Control



M1 (main) is controlled by CB (control board) via the PSB (power supply board).

1. Operation

a. M1

M1 is a brushless DC motor, outer rotor type, driven by 24VDC, it is used to drive the paper feed section, and paper conveyance system.

M1 is PLL-controlled by a built-in speed sensor, which keeps the speed of M1 constant.

2. Signals

a. Output signal

(1) M1 DRIVE (CB→PSB→M1)

This is the drive control signal for M1.

[L] : M1 ON

[H] : M1 OFF

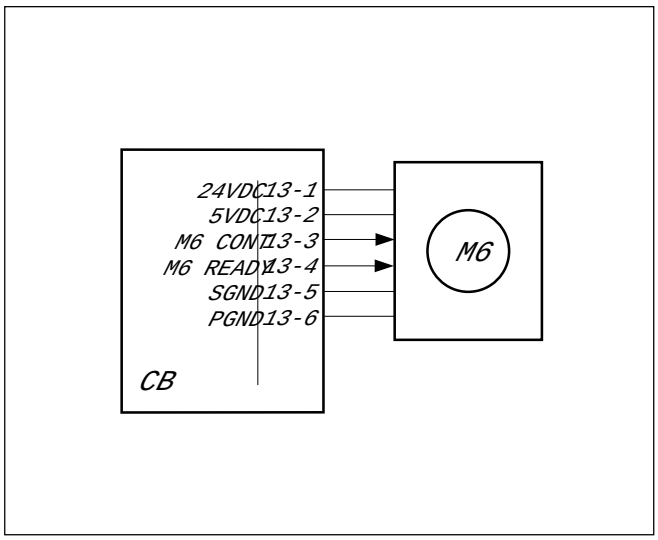
(2) M1 RDY (CB→PSB→M1)

This is the rotating condition signal for M1.

[L] : M1 is under specified speed.

[H] : M1 is not specified speed.

[5] M6 (Drum Drive) Control



M6 (drum drive) is controlled by CB (control board).

1. Operation

a. M6

M6 is a brushless, outer rotor type DC motor, driven by DC24V. It is used to drive the developing unit, drum unit, fixing unit, and exit roller.

M6 is PLL-controlled by a build-in speed sensor, which keeps the speed of M6 constant.

Drum line speed: 145.5mm/sec

2. Signals

a. Output signal

(1) M6 DRIVE (CB→M6)

This is the drive control signal for M6.

[L] : M6 ON

[H] : M6 OFF

(2) M6 READY (CB→M6)

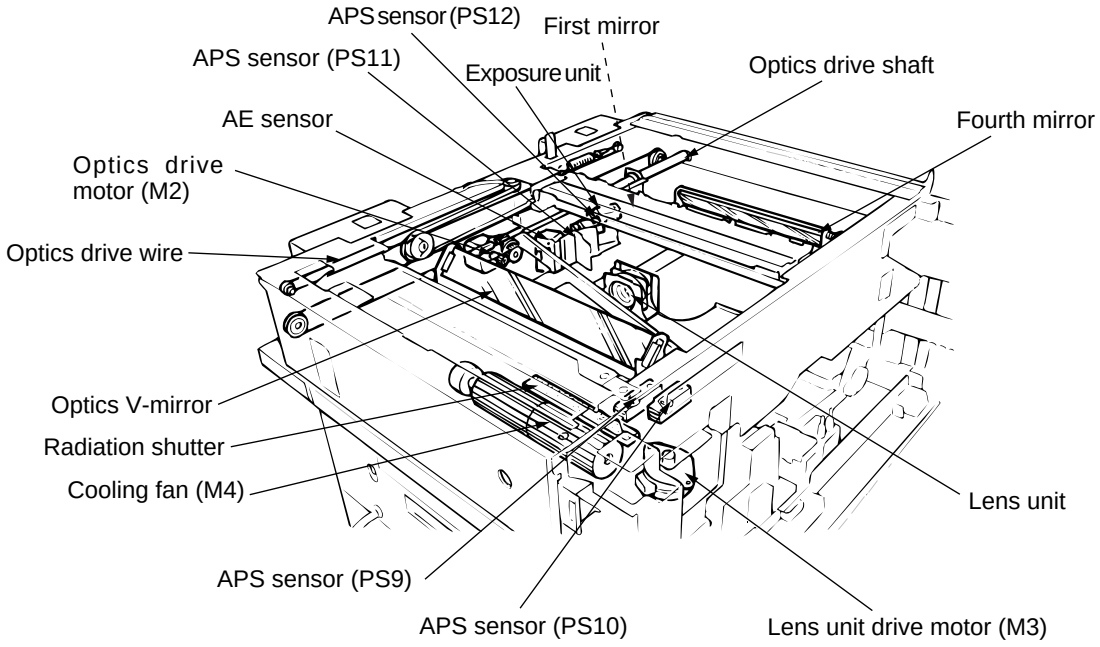
This is the rotating condition signal for M6.

[L] : M6 is under specified speed.

[H] : M6 is not specified speed.

OPTICS SECTION

[1] Construction



[2] Mechanism

	Mechanism	Method
	Light source	Halogen lamp (280W)
	Exposure	Moving light source with slit exposure
	Scanning	First, second, third mirror moving system
	Lamp power supply	Lamp cord
*1	Magnification change	Lens shift and scanning speed adjustment
	Focusing correction when adjusting magnifications	Fourth mirror shift
*2	Light intensity compensation for reduction copies	Light distribution plate
*3	Optics and machine inside cooling	Exhaust cooling by fan and radiation shutter

***1: Magnification**

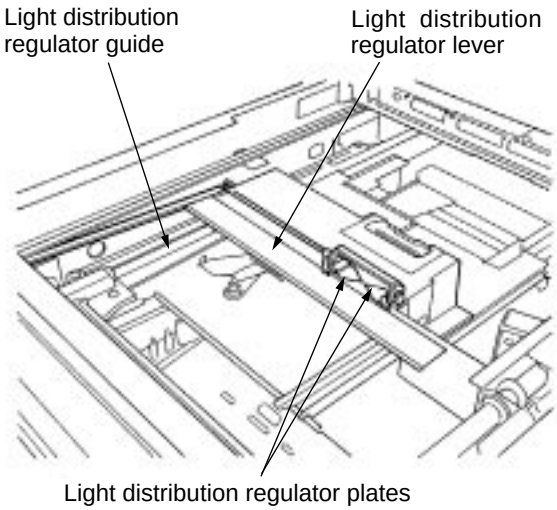
The lens unit changes the magnification by moving along the magnification drive shaft. This movement is produced by the lens unit drive motor (M3) and drive belt arrangement.

At the same time, the fourth mirror also changes the magnification by moving along the magnification drive shaft. This movement is produced by the lens unit via magnification arm located under the unit and engaged with it.

***2: Light intensity compensation for reduction copies**

Light intensity compensation works by changing the angle of the light distribution regulator plates.

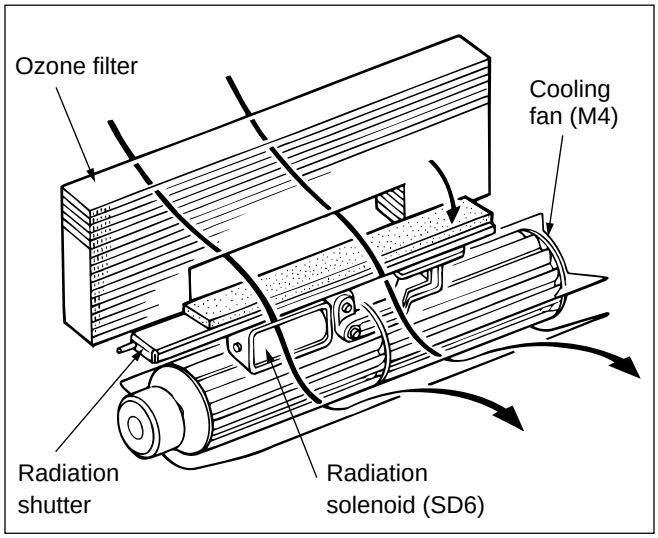
These plates are driven by the light distribution regulator lever that moves along the light distribution regulator guide when making reduced copies.



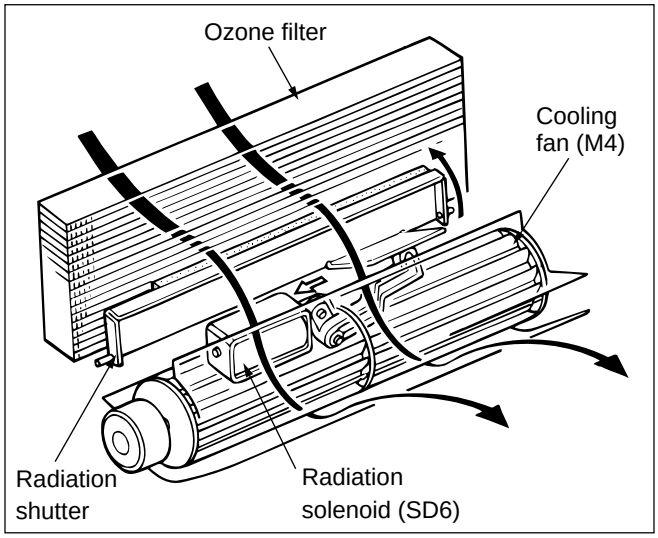
***3: Optics and machine inside cooling**

A radiation shutter is provided at the outside air intake section to improve radiation efficiency.

During idling, the radiation solenoid (SD6) is OFF and the radiation shutter is open. Inside air is exhausted from the optics and machine inside through an opening under the ozone filter by means of the cooling fan (M4).



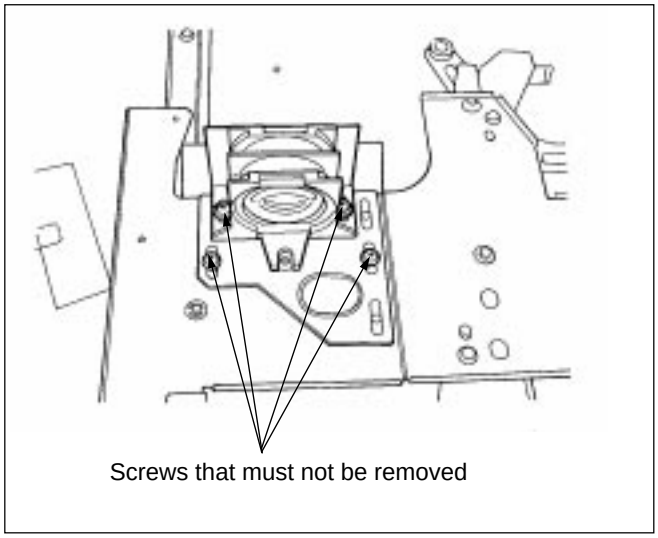
When the main motor (M1) is ON, the radiation solenoid (SD6) is energized to close the radiation shutter. Inside air is exhausted from the optics and machine inside through the ozone filter by means of the cooling fan (M4).



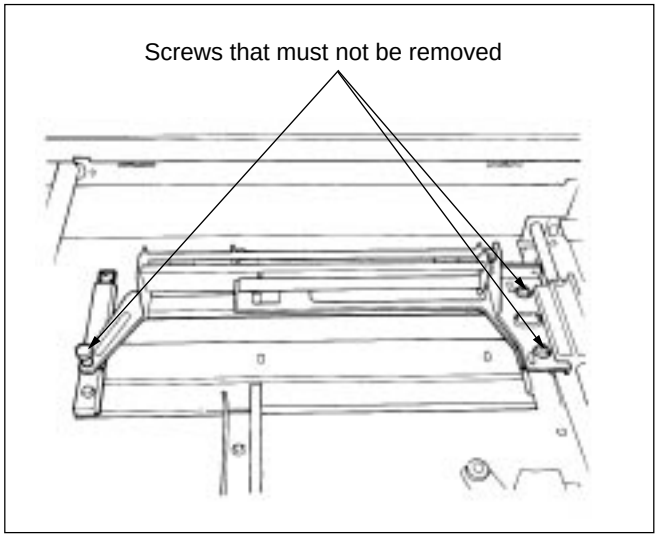
[3] Disassembly and Assembly

1. Screws that must not be removed

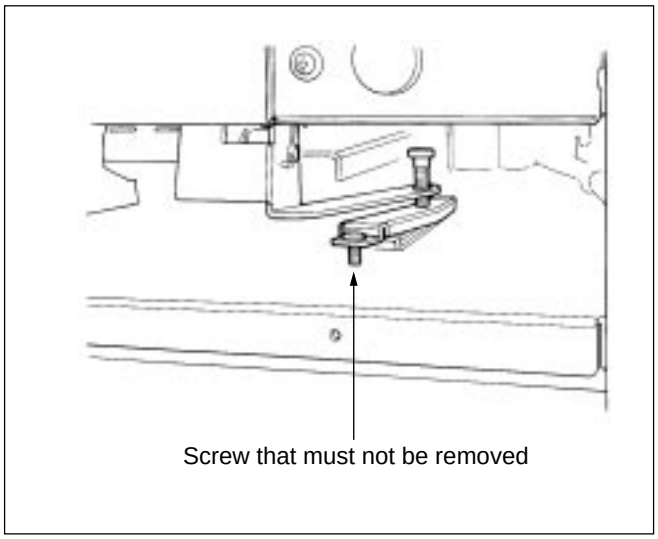
- 4 set screws for the lens unit



- 2 set screws and one adjusting screw for the fourth mirror unit



• One angle adjusting screw for the fourth mirror unit



2. Removing/reinstalling the exposure unit

Cautions:

Unplug the power cord.

Cautions:

(1) When moving the exposure unit, be sure to hold the optics drive shaft side to move it.

(2) When installing the exposure unit, always perform a copy image check. (Refer to the Adjustment section for details.)

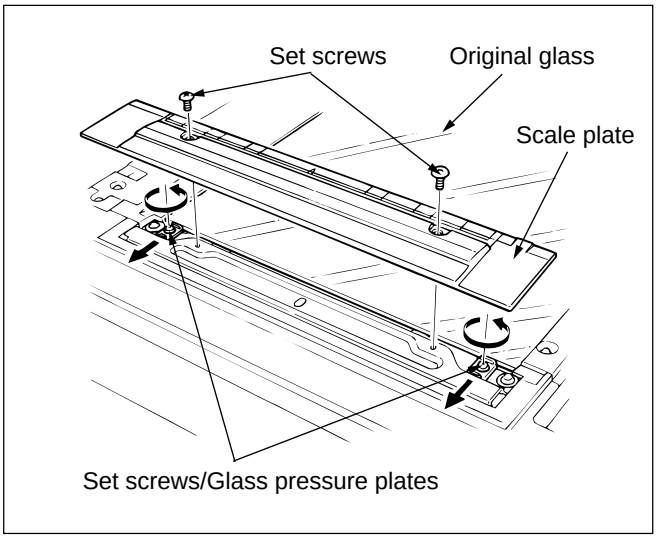
a. Removal procedure

(1) Remove the original cover or ADF.

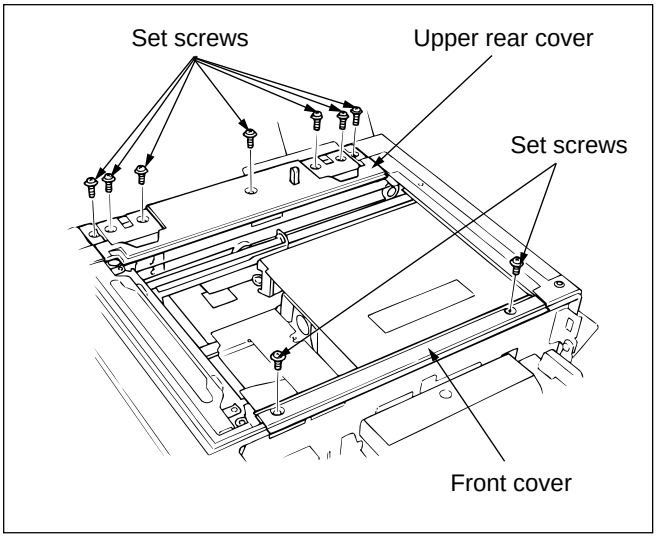
(2) Open the front door.

(3) Remove the 2 set screws, then remove the scale plate.

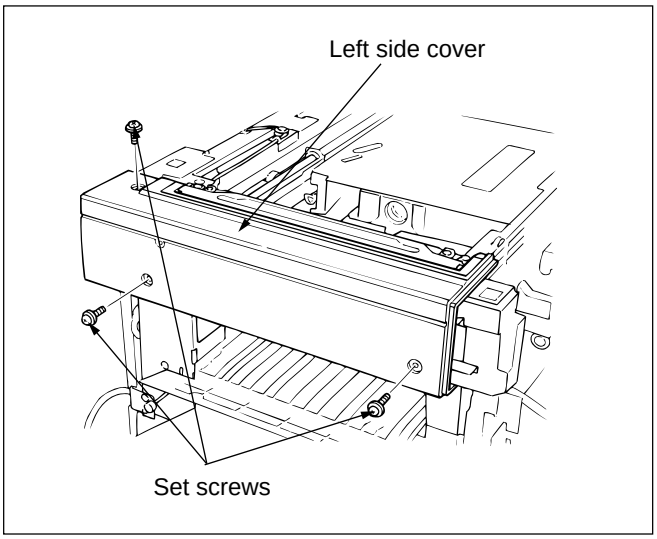
(4) Loosen the 2 set screws for the glass pressure plate, then remove the original glass.



(5) Remove the 9 set screws, then remove the front cover and upper rear cover.

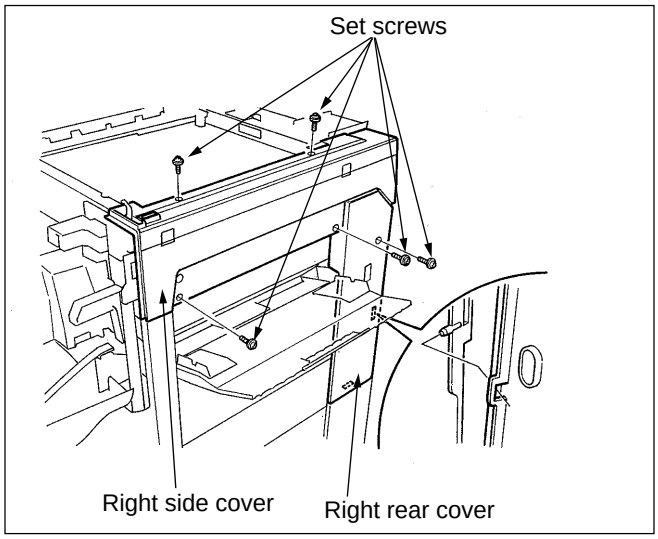


(6) Remove the three set screws, then remove the left side cover.



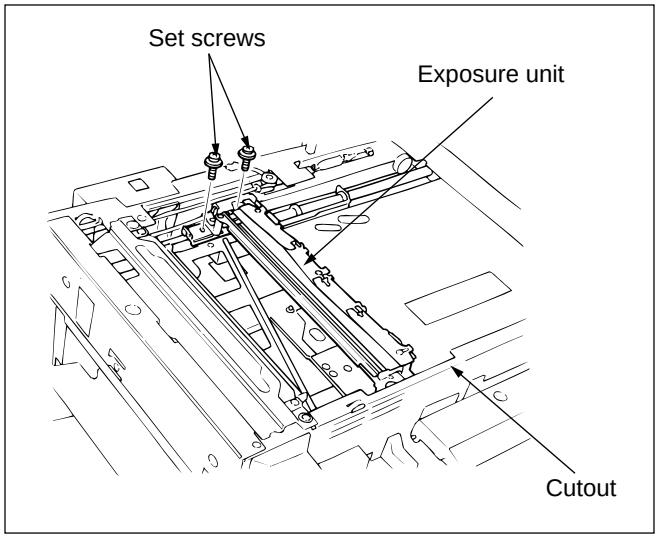
(7) Open the by-pass feed tray, remove the 5 set screws, and remove the right rear cover and right side cover.

Note: The right rear cover is fixed by the claw. Therefore, when removing the right rear cover, it should be twisted toward you so that it may be disengaged from the claw after removing the screw (lower left) of the rear cover.



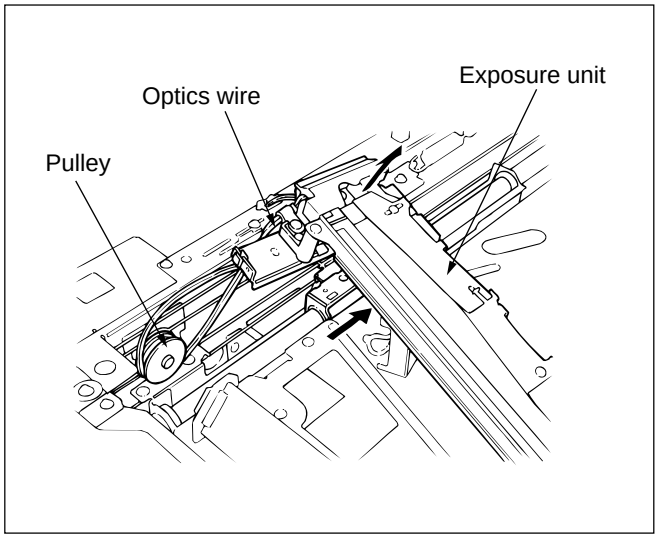
(8) Move the exposure unit to the cutout of the front frame.

(9) Remove the 2 set screws securing the exposure unit.



(10) Move the exposure unit to the paper feed side, until the pulley can be seen.

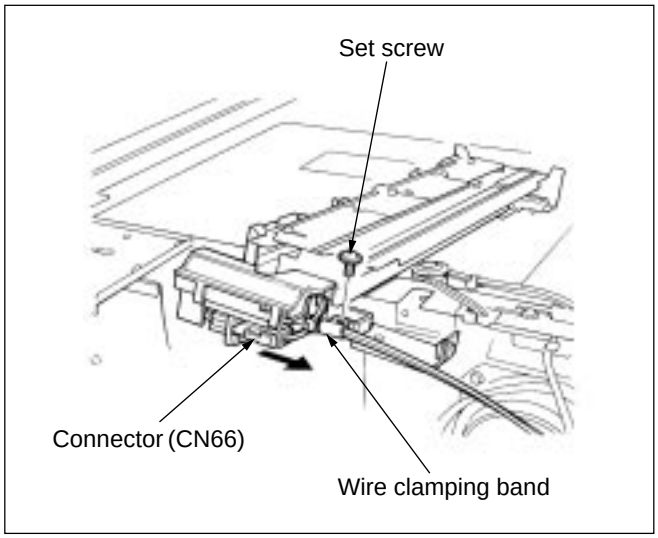
(11) Remove the optics wire from the pulley, and remove the exposure unit upward.



(12) Remove the set screw, and then remove the wire clamping band.

(13) Remove the wire from the wire stay, disconnect CN66, and remove the exposure unit.

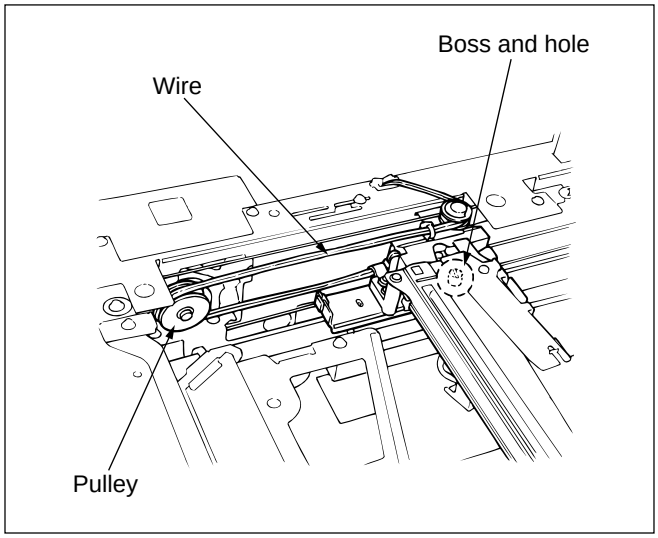
Note: The wire band does not need to be cut.



b. Installation procedure

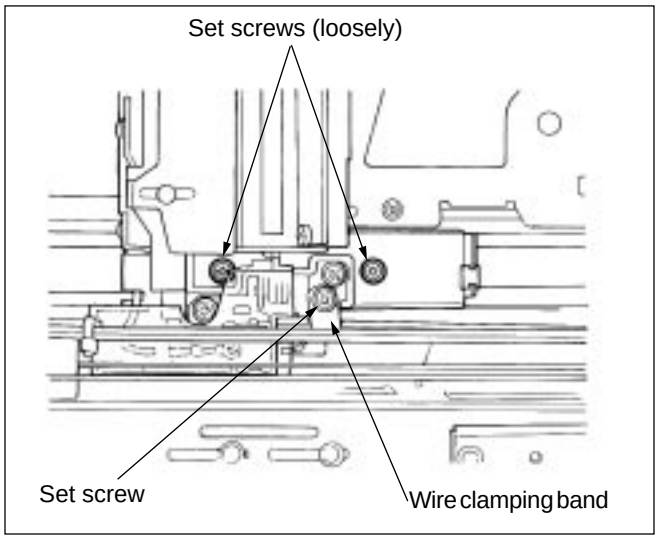
(1) Connect CN66 to the exposure unit and hang the optics wire on the wire holder.

(2) Route the optics wire through the pulley as shown in the illustration below and place the exposure unit on the optics shaft holder so that the boss and hole are aligned.

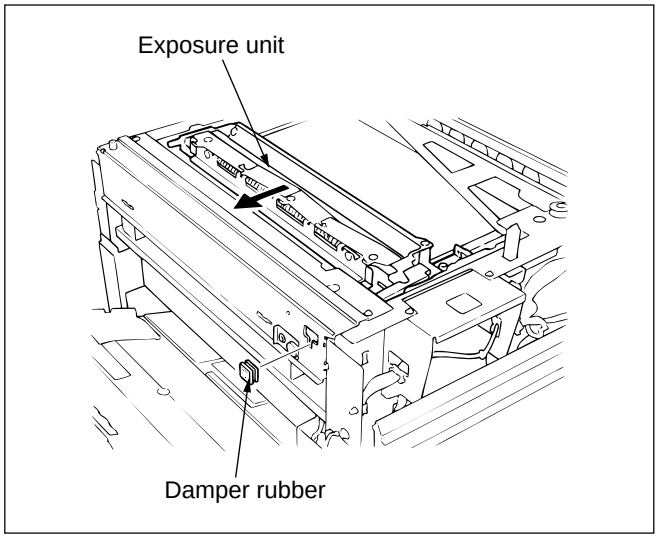


(3) Secure the wire with the wire band using the set screw.

(4) Install the exposure unit temporarily using the 2 set screws.

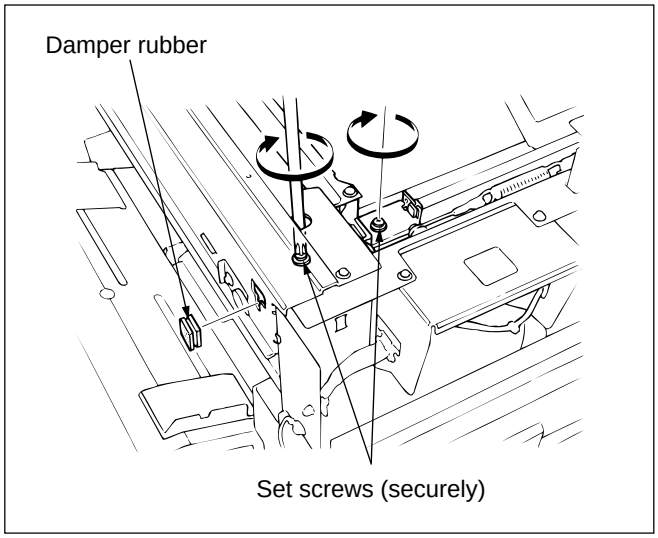


(5) Remove the damper rubber from the paper feed side frame, then move the exposure unit all the way to the paper feed side.



(6) Pressing the exposure unit to the frame by hand, tighten the 2 set screws installed at step (4).

(7) Reinstall the damper rubber into the cutout of the frame.



(8) Reinstall the removed parts by reversing the procedure described above.

3. Replacing the exposure lamp

⚠ **Cautions:**

(1) Unplug the power cord.

(2) When disconnecting the lamp terminal, be sure to hold the terminal.
Never pull the cord.

(3) Do not touch the glass of the exposure lamp with bare hands.

(4) Be sure that all connectors are connected, any cord is not caught, and all screws are tightened.

Cautions:

(1) When installing the exposure lamp, ensure that the manufacturer's label on the lamp is facing the front of the main body.

(2) When installing the exposure lamp, ensure that the nipple is facing the paper exit side.

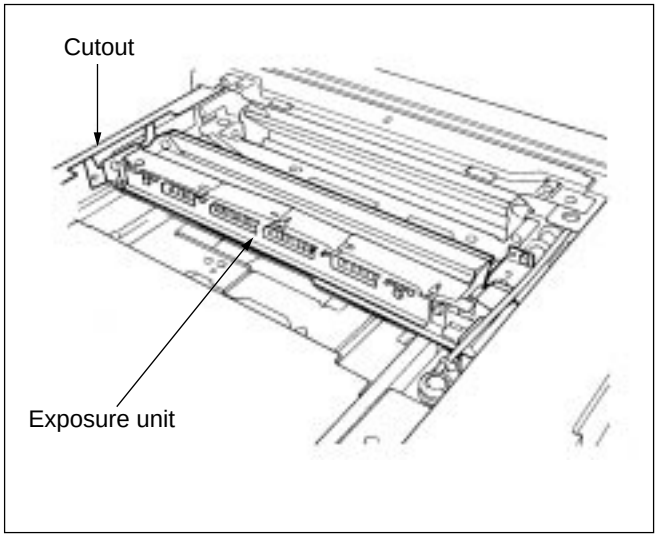
(3) When installing the exposure unit, always perform a copy image check. (Refer to the Adjustment section for details.)

(4) When moving the exposure unit, hold it on the side of the optics drive shaft.

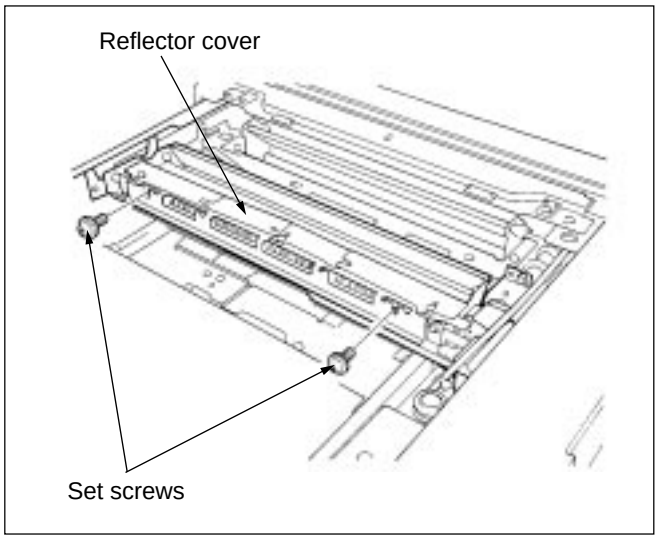
a. Procedure

(1) Remove the original cover or ADF, scale plate, original glass, front cover and rear cover.

(2) Move the exposure unit to the cutout of the front frame.

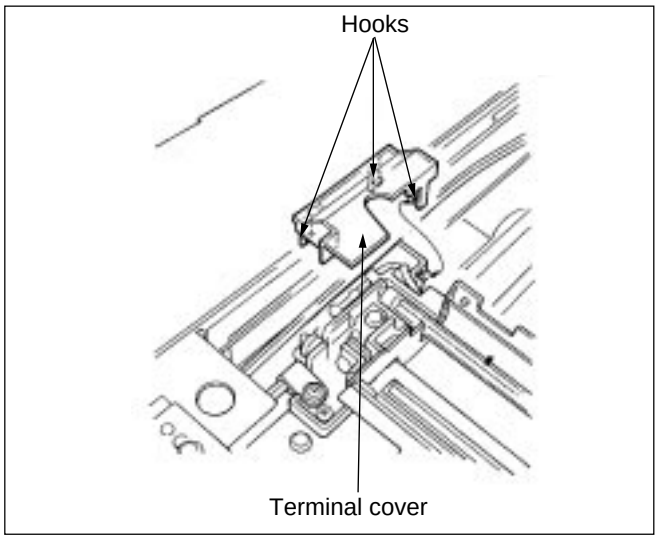


(3) Remove the 2 set screws, then remove the reflector cover.

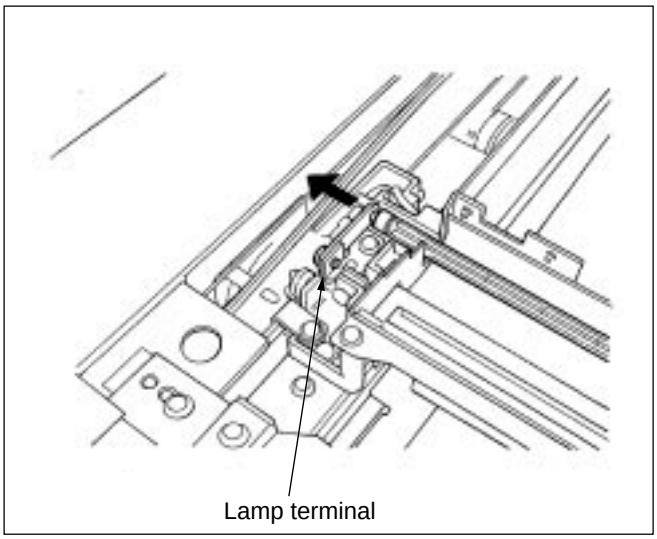


(4) Release the three hooks, then remove the terminal cover from the exposure lamp terminal section.

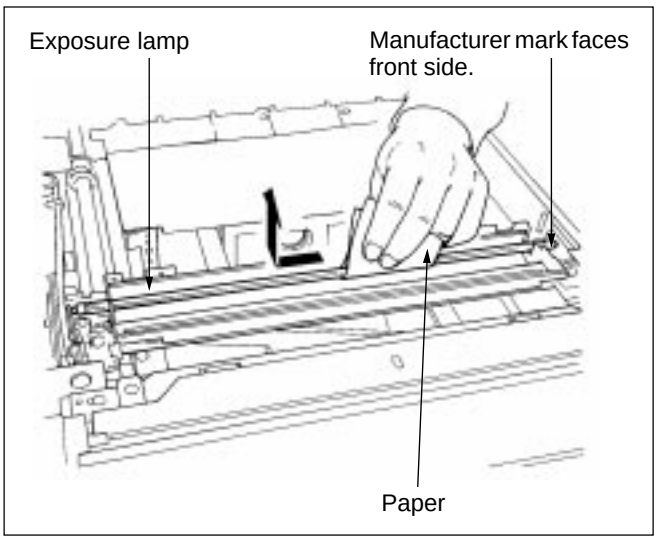
Caution: Do not damage the hooks.



(5) Press the lamp terminal to the direction of the arrow.



(6) Using a paper to hold the exposure lamp, remove it upward.



(7) Reinstall the removed parts by reversing the procedure described above.

4. Removing/reinstalling the optics V-mirror

Caution: Unplug the power cord.

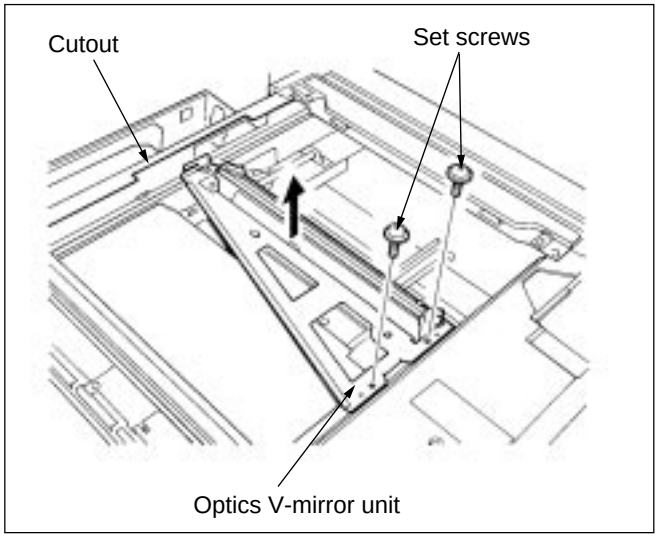
Caution: When moving the optics V-mirror, hold it on the side of the optics drive shaft.

a. Procedure

(1) Remove the original cover or ADF, scale plate and original glass.

(2) Move the optics V-mirror to the cutout of the front frame.

(3) Remove the 2 set screws, then remove the optics V-mirror upward.



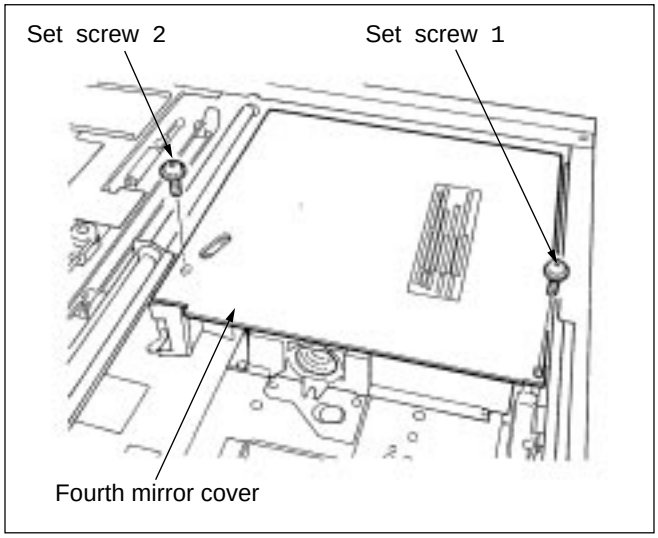
(4) Reinstall the removed parts by reversing the procedure described above.

5. Removing/reinstalling the fourth mirror cover

⚠ Caution: Unplug the power cord.

a. Procedure

(1) Remove the scale plate and original glass.
(2) Move the exposure unit all the way to the paper exit side.
(3) Remove the 2 set screws, then remove the fourth mirror cover to the upper slant direction while releasing the two tabs from the paper feed side frame.



(4) Reinstall the removed parts by reversing the procedure described below.

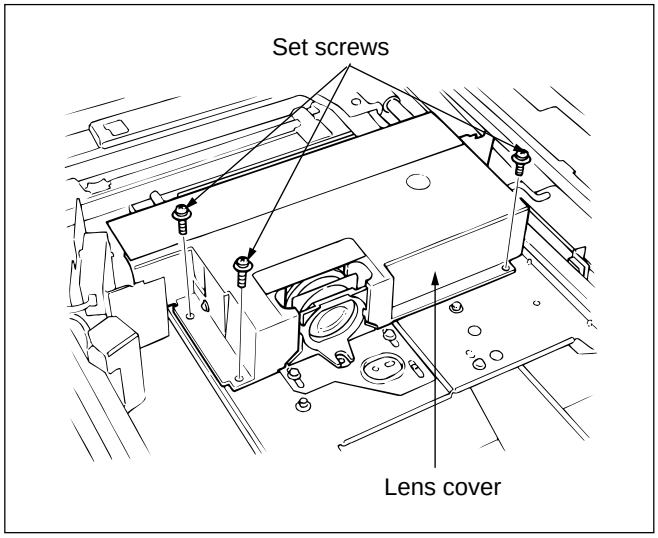
- Put two tabs of the fourth mirror cover in the groove of the frame correctly.
- First, tighten the set screw for cover at the front of the main body (set screw 1 in the figure) while pressing the cover against the frame at the paper feed side. Then, tighten the set screw at the rear side of the main body (set screw 2 in the figure).

6. Removing/reinstalling the lens cover

⚠ Caution: Unplug the power cord.

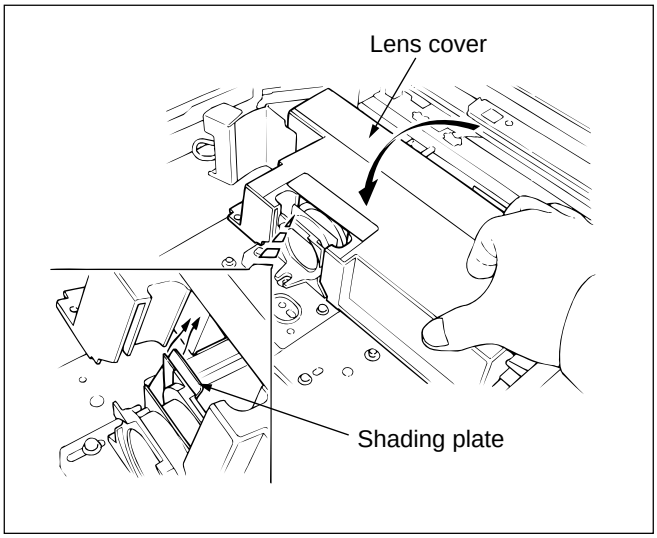
a. procedure

(1) Remove the scale plate and original glass.
(2) Remove the fourth mirror cover.
(3) Remove the 3 set screws, then remove the lens cover.



(4) Reinstall the removed parts by reversing the procedure described above.

Note: Install the shading plate properly into the grooves of the lens cover.



7. Installing the optics wire

Caution: Unplug the power cord.

Caution:

(1) When replacing or rewinding the optics wire, always perform a copy image check. (Refer to the Adjustment section for details.)

(2) When winding wire on the pulley, be sure to wind it tightly along the groove without crossing the wire.

(3) When moving the lens unit, hold it on the side of the magnification drive shaft.

a. Removal procedure

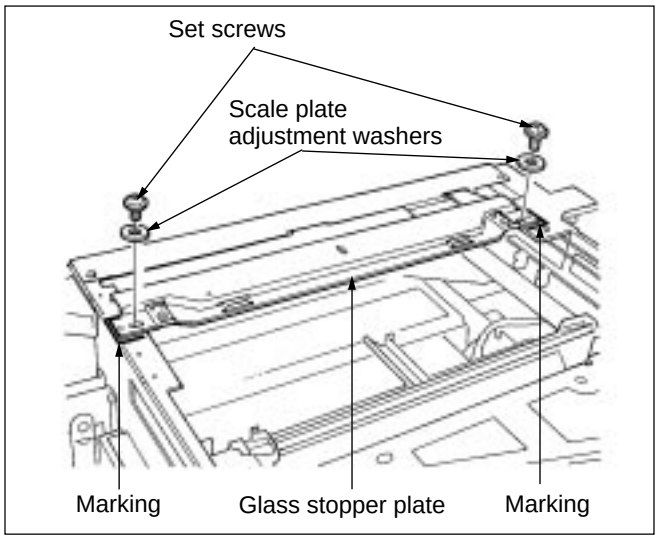
(1) Remove the original cover or ADF, scale plate, original glass, front cover, upper rear cover, left side cover, right side cover, and rear cover. (Refer to the drive section for rear cover removal.)

(2) Remove the exposure unit and optics V-mirror.

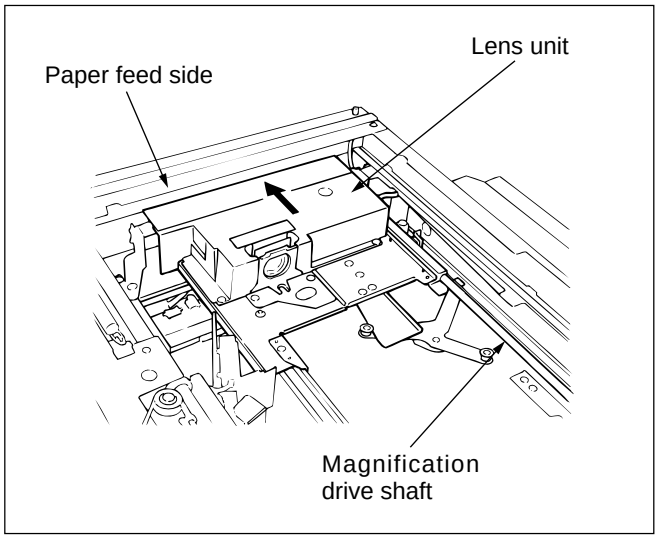
(3) Remove the fourth mirror cover.

(4) Mark position of the glass stopper plate on the upper frame so that it can be installed without adjustment.

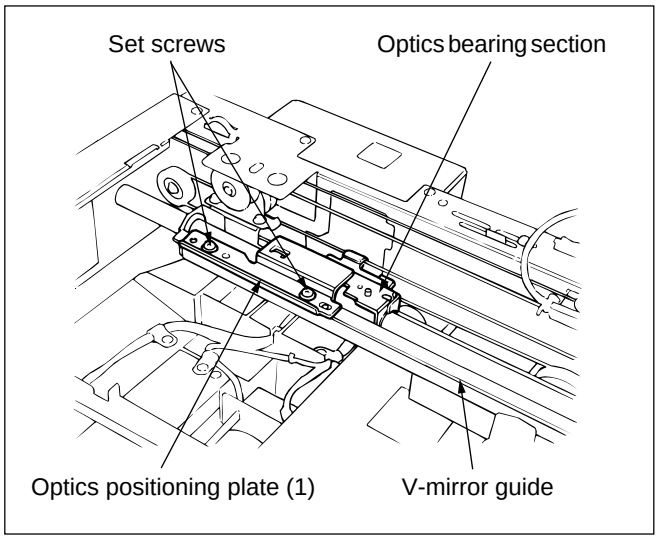
(5) Remove the 2 set screws and the scale plate adjustment washers, then remove the glass stopper plate.



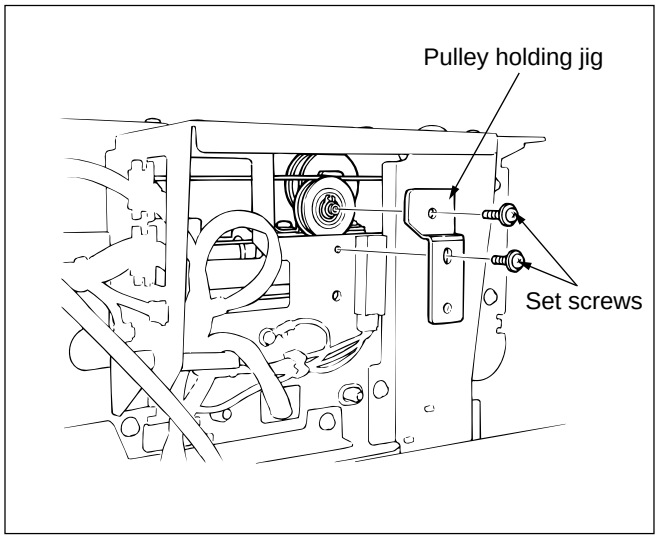
(6) Move the lens unit all the way to the paper feed side.



(7) Using the 2 set screws, install the optics positioning plate (1) (special tool) on the optics bearing section and the V-mirror guide. In this case, engage the protrusion of the jig with the square hole of the bearing.

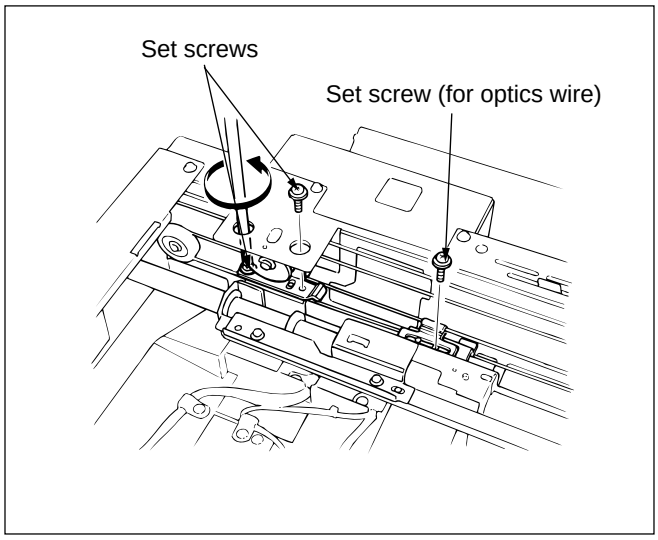


(8) Using the 2 set screws, install the pulley holding jig (special tool) on the frame on the rear side of the main body and the pulley, then affix the pulley on the main body.



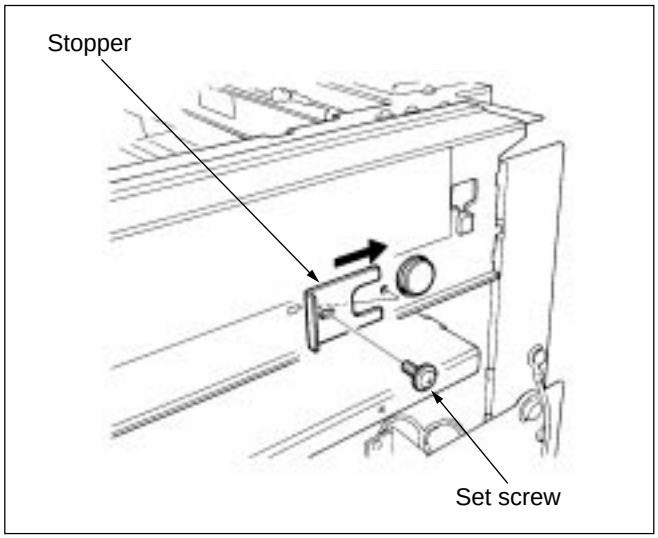
(9) Remove the 2 set screws through the access holes as shown.

(10) Remove the set screw securing the optics wire.



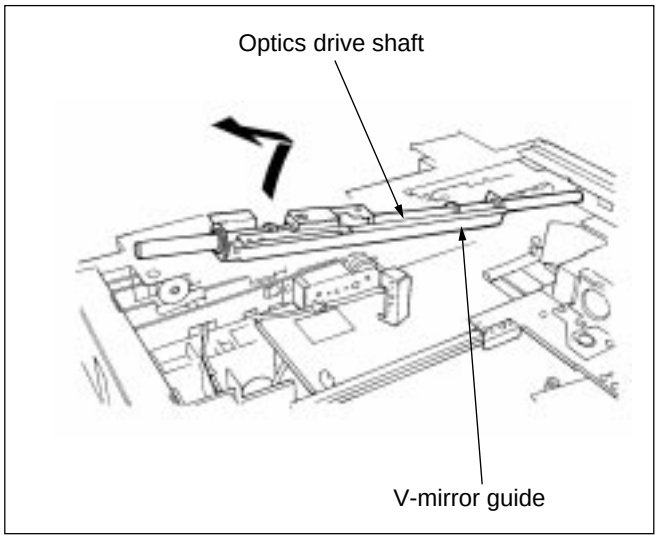
(11) Remove the set screw, then remove the optics drive shaft stopper from the frame of the paper feed side.

Note: When reinstalling the shaft stopper to the frame, tighten the set screw while pressing the stopper rearward.

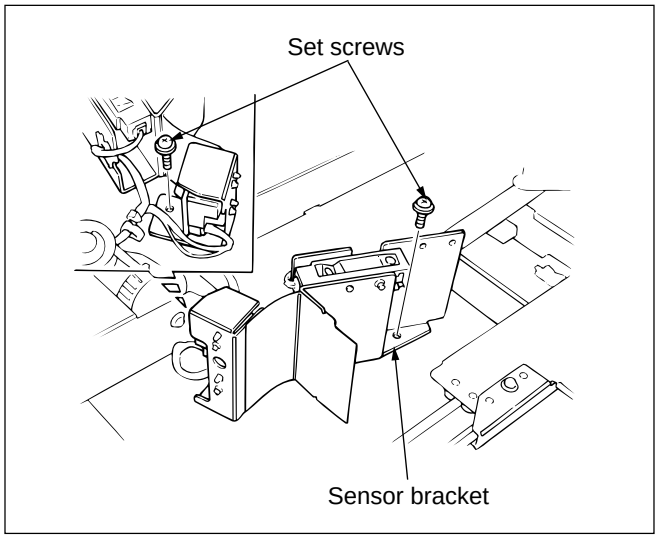


(12) First push the optics drive shaft to the paper feed side, then remove the shaft upward.

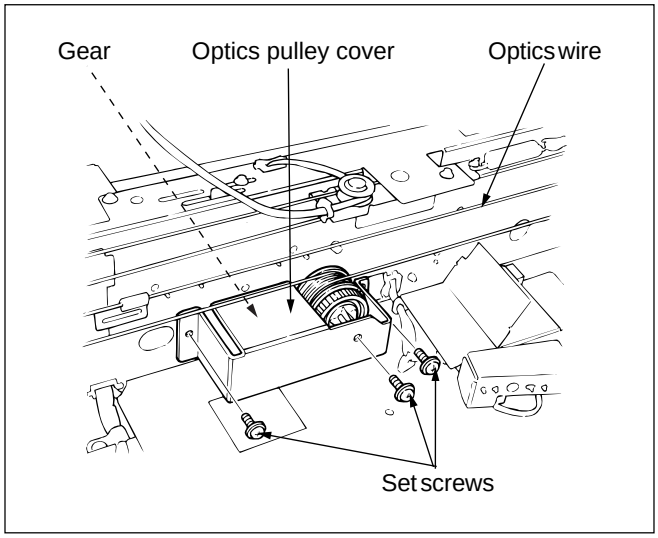
Note: Take care not to remove the V-mirror guide from the optics drive shaft. If removed, install the 2 felts properly so that each felt is set between the guide and shaft holder. When installing the drive shaft, its grooved edge should be facing the paper feed side.



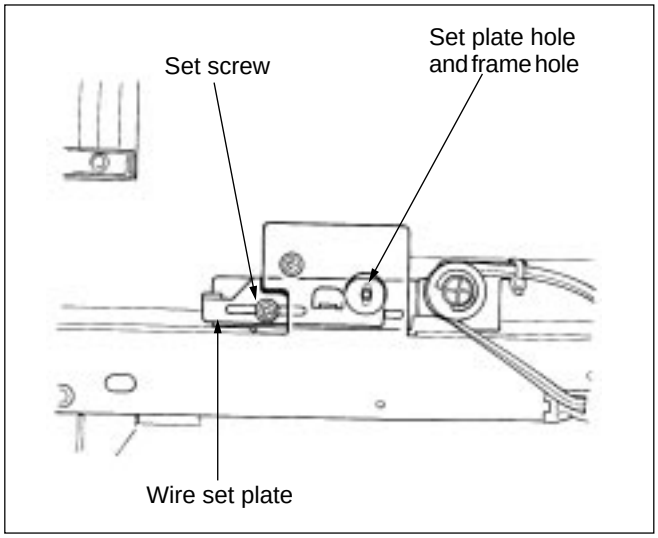
(13) Remove the 2 set screws, then remove the sensor bracket.



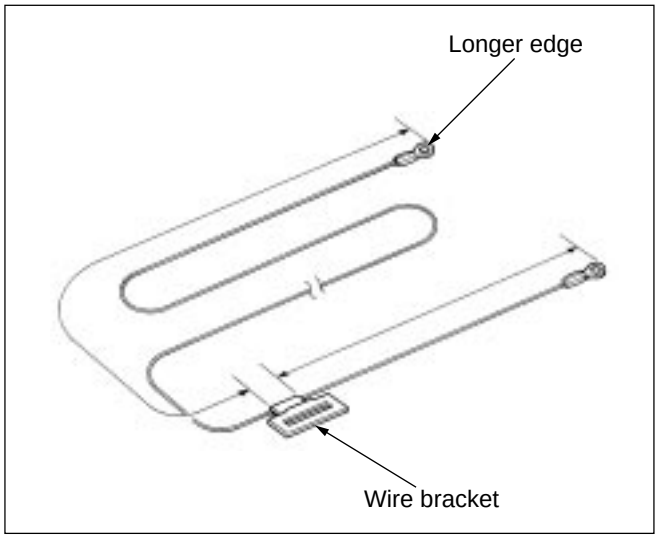
(14) Remove the 3 set screws, then remove the optics pulley cover.
(15) Remove the 3 gears, then remove the optics wire.



(16) Temporarily lossen the set screw of the wire set plate.
(17) Using the working hole, adjust the wire set plate so that center of the set plate hole is aligned with center of frame hole. Ensure that a pin (ϕ3) can be passed through smoothly.
(18) Tighten the set screw of the wire set plate.



(19) Install the edge with distance between the end of wire and wire bracket longer.



(20) Attach the end of wire to the hook on the wire set plate and thread the wire by following the number below.

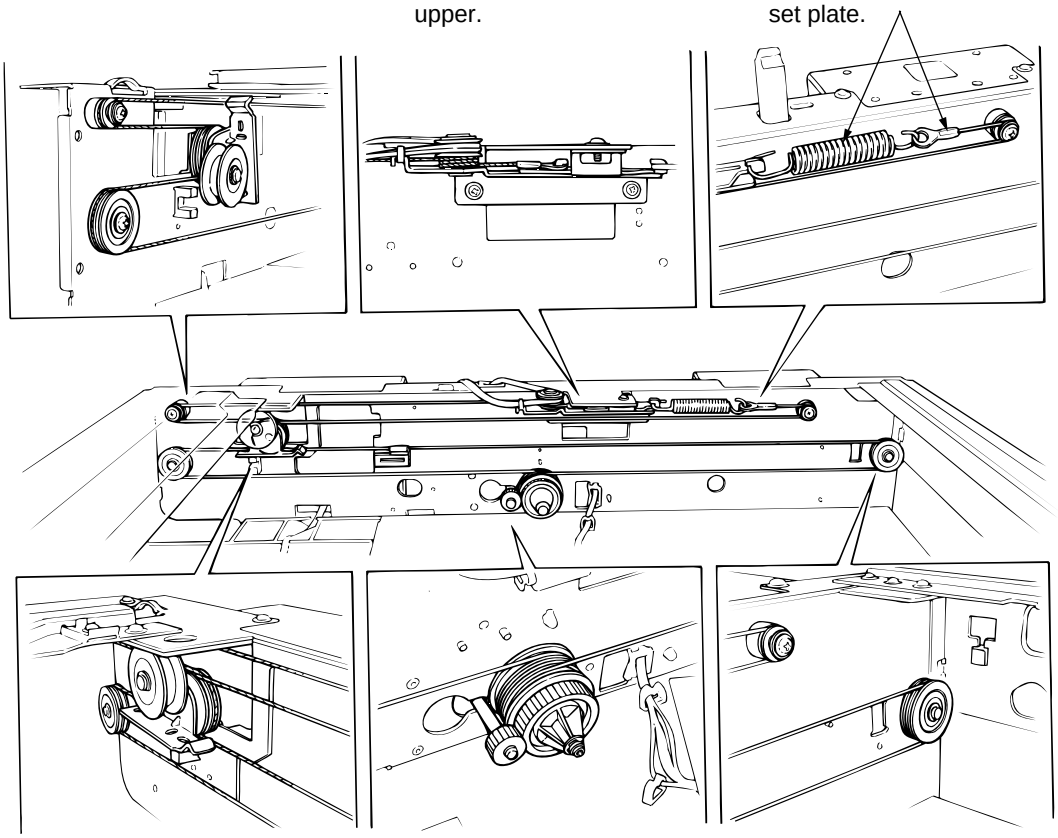
Note: Install the shorter hook side of the tension spring to the end of wire so that the hook is facing upward.

(21) Reinstall the removed parts by reversing the procedure.

(2) Pass through the rear grooves.

(1) Hang the wire onto the hook and wind 3 turns couterclockwise, going from the lower to the upper.

(6) Pass through the front groove and hook the tension spring between the wire end and wire set plate.

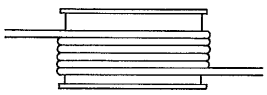


(5) Pass through the front groove.

(3) Wind 5 turns clockwise, going from the rear to the front.

(4) Pass through the front groove.

Note for step (3) above:
- Wind the wire on the center section of the pulley to prevent it from touching the edges.
- This prevents the wire from riding on the pulley edge when the exposure unit may overrun on the paper exit side.
- Wind the wire tightly.

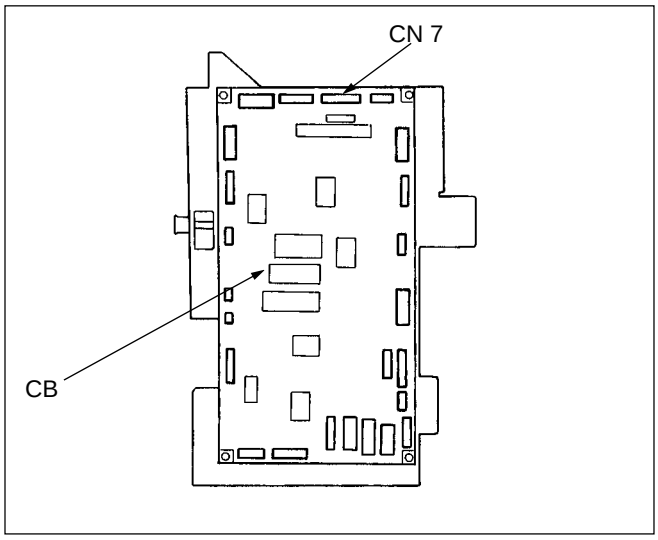


8. Removing/Reinstalling the lens unit

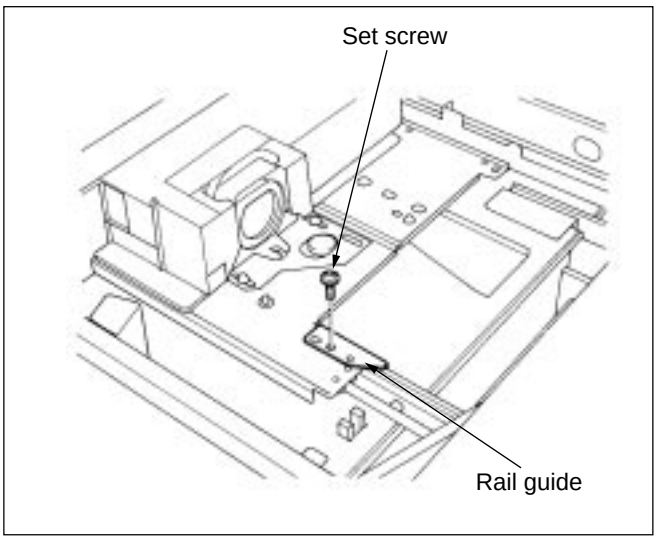
⚠1 Caution: Unplug the power cord.

a. Procedure

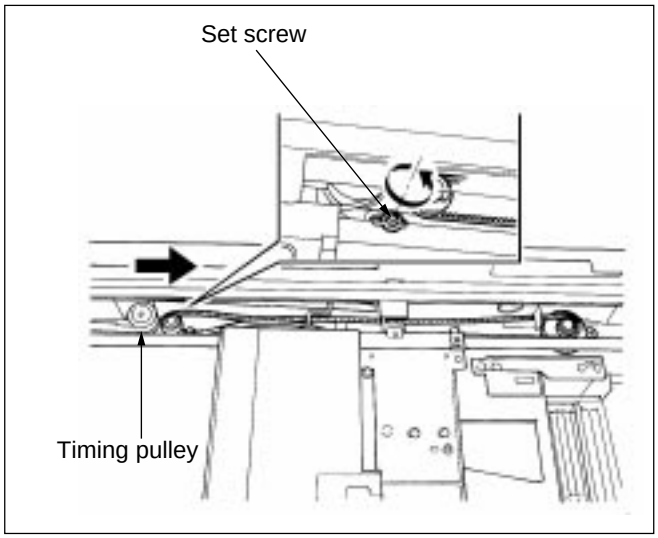
(1) Remove the original cover, scale plate, original glass, front cover, upper rear cover, left side cover, right side cover, and rear cover. (Refer to the drive section for rear cover removal.)
(2) Move the exposure unit all the way to the paper exit side.
(3) Remove the fourth mirror cover.
(4) Disconnect CN 7 for the lens drive motor from the CB to prevent dynamic brake generated by rotating the motor shaft.



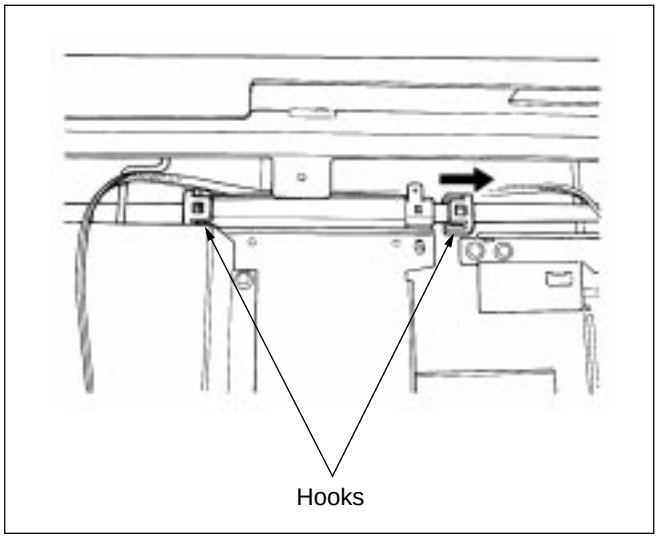
(5) Remove the set screw, then remove the rail guide.



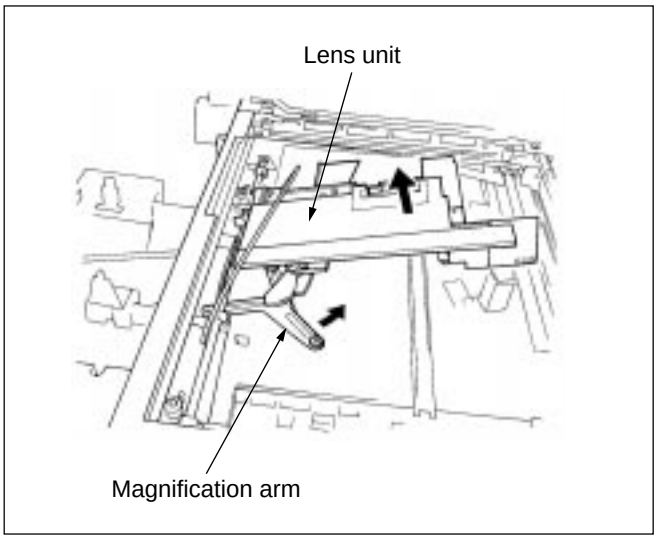
(6) Move the fourth mirror unit all the way to the paper feed side.
(7) Loosen the set screw of the tension gear plate located at the paper feed side.
(8) Press the timing pulley plate all the way to the paper exit side to release tension for the lens drive belt, then tighten the set screw.



(9) Unhook the magnification drive shaft in two places.

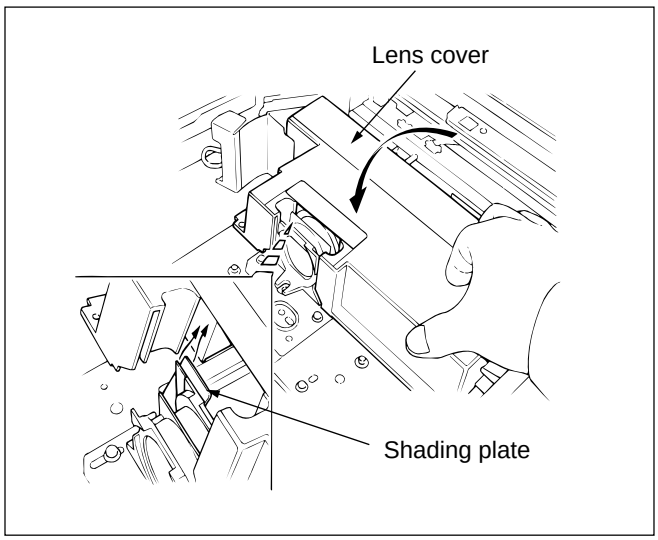


(10) While pressing the magnification arm to the paper exit side, remove the lens unit upward from the magnification drive shaft.

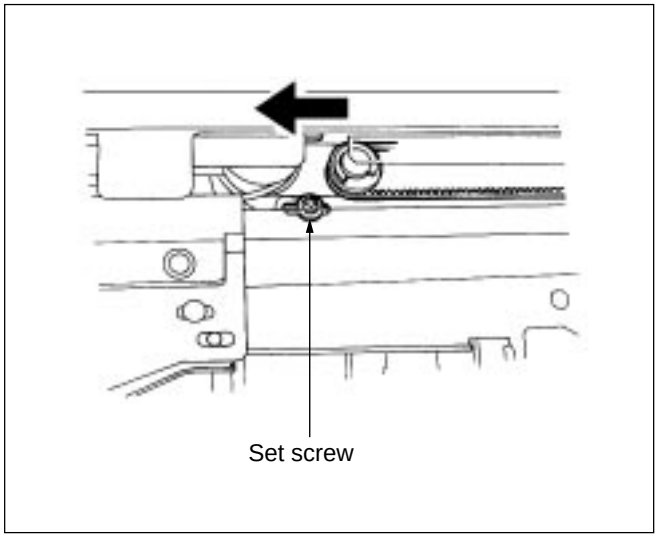


(11) Reinstall the removed parts by reversing the procedure described above, noting the following:

Note: Ensure that the shading plate of the lens unit is set properly into the grooves of the lens cover.



Note: Loosen the gear plate set screw to add tension to the lens drive belt, then tighten the screw again.



9. Removing/reinstalling the cooling fan motor

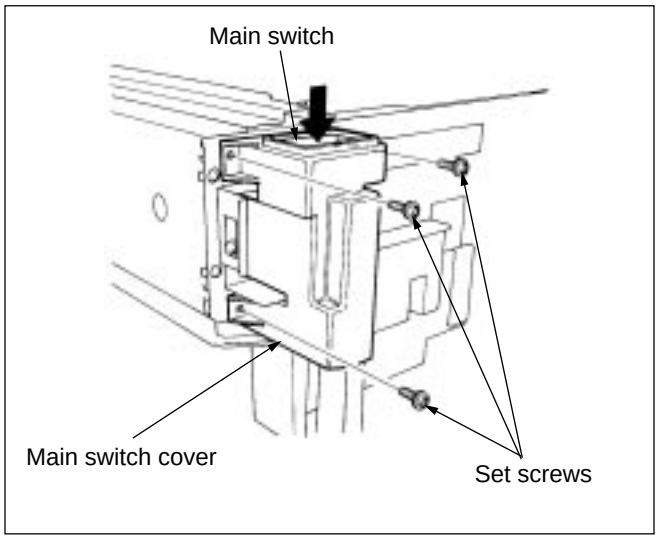
Caution: Unplug the power cord.

Caution: When installing the fan case on the upper body, align the bosses of the case with the holes of the upper body.

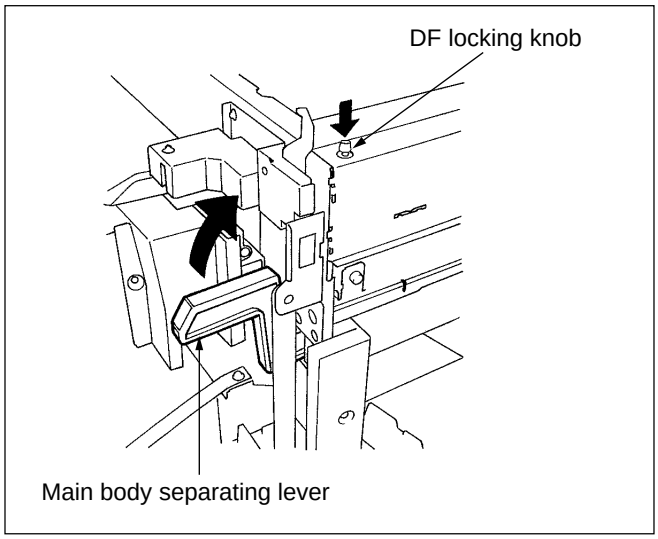
a. Procedure

(1) Remove the scale plate, original glass, front cover, upper rear cover, left side cover, and rear cover. (Refer to the drive section for rear cover removal.)

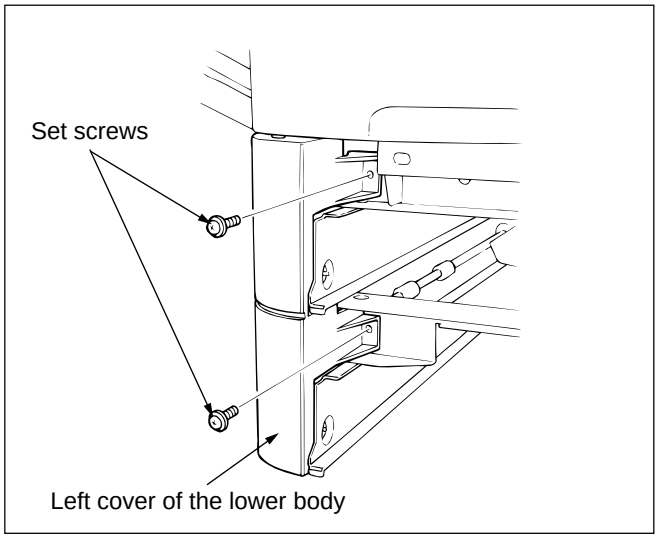
(2) Remove the 3 set screws, press the main switch, and remove the main switch cover.



(3) When a ADF has been installed, press the DF locking knob so that the main body separating lever can be used to open the upper body.



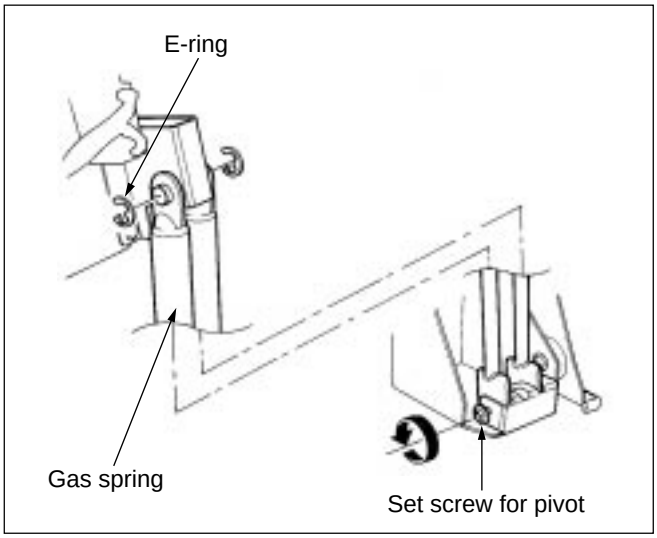
(4) Remove the paper tray, then remove the 2 set screws, open the front cover and remove the left cover of the lower body.



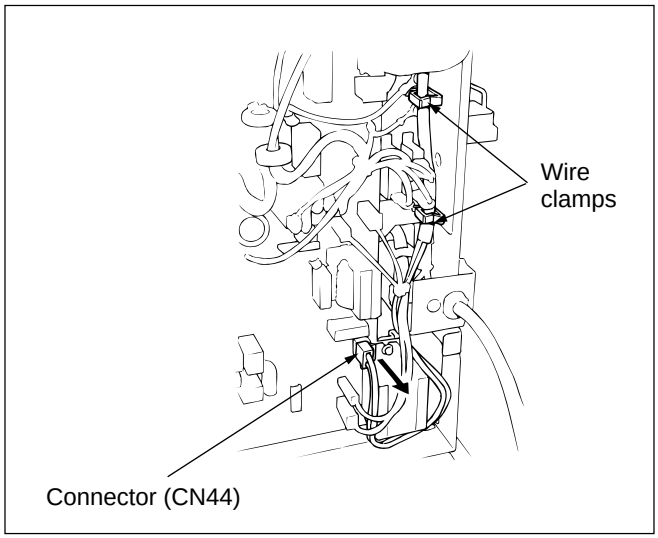
(5) Loosen the set screw for the lower pivot of the right gas spring until the lower pivot can be removed.

(6) Remove the E-ring, then remove the gas spring.

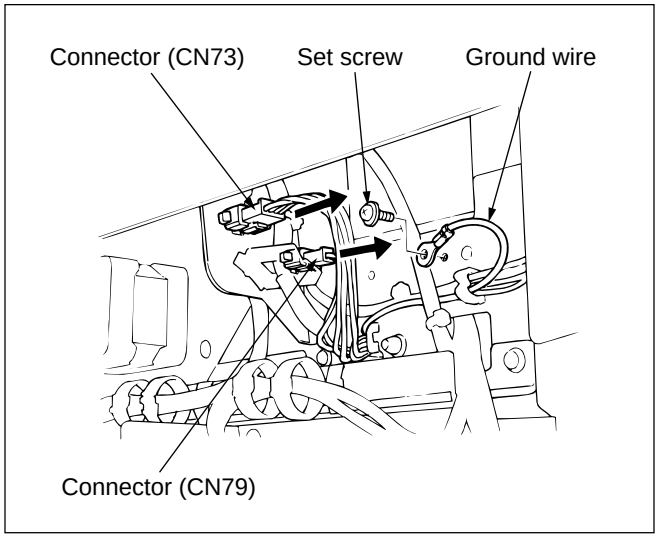
Note: When ADF has been installed, the 2 gas springs are installed. They must the removed.



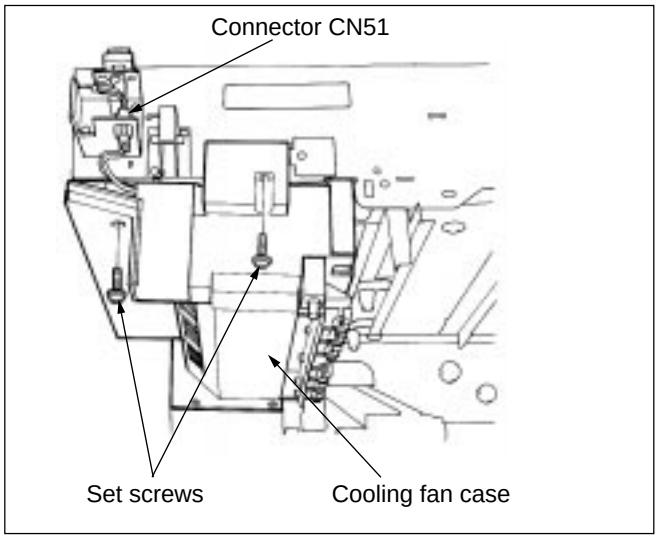
(7) Disconnect CN44 for the main switch from the PSB (power supply board).
(8) Remove the wires for CN44 from the wire clamps.



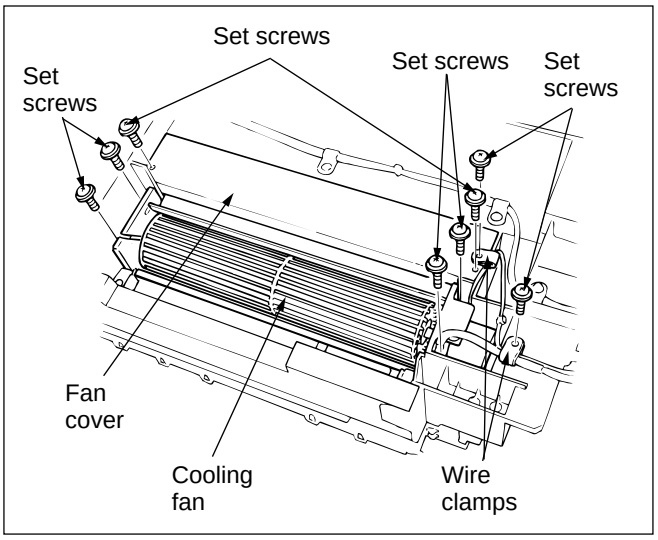
(9) Disconnect CN73 and CN79 for the cooling fan motor and radiation solenoid located on the right side of the optics motor.
(10) Remove the set screw, then remove the ground wire of the cooling fan motor.



(11) Disconnect CN51 for the main switch.
(12) Remove the 2 set screws, then remove the cooling fan case forward.

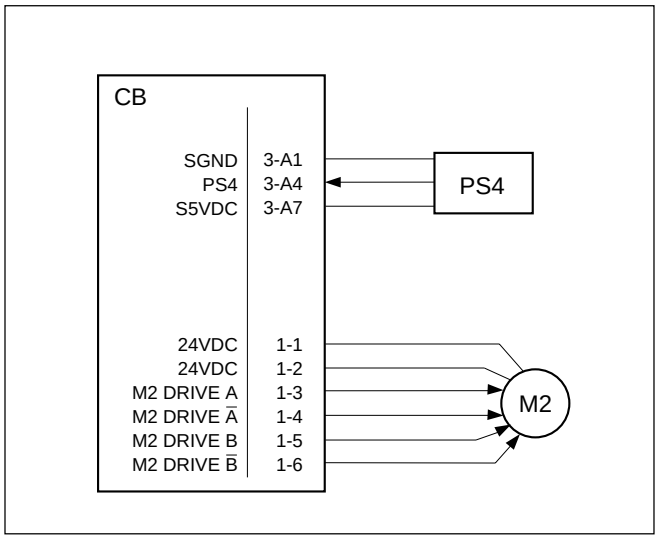


(13) Remove the set screw securing the wire clamp for radiation solenoid.
(14) Remove the 2 set screws, then remove the fan cover from the fan case.
(15) Remove the set screw securing the clamp for the fan motor wire.
(16) Remove the 4 set screws, then remove the cooling fan from the fan case.



(17) Reinstall the removed parts by reversing the procedure described above.

[4] M2 (Optics Drive) Control



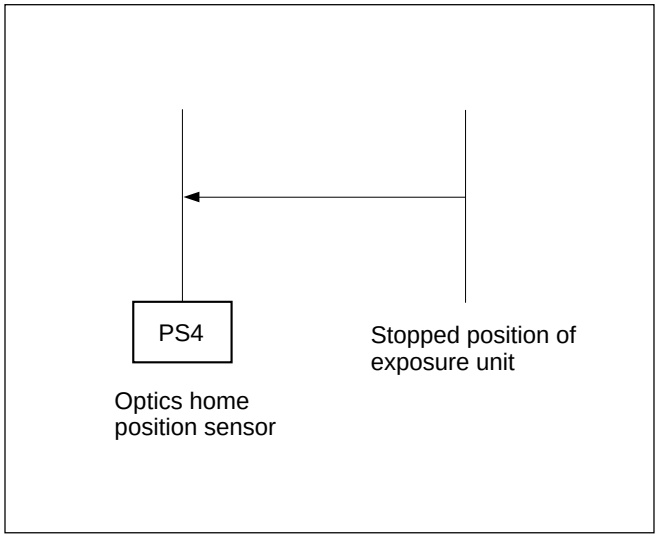
The optics scan is performed by M2 (optics drive) which is driven by 24 VDC. M2 is driven by step signals from the CB (control board). The home position of the exposure unit is detected by PS4 (home position).

1. Operation

M2 is a 2-phase stepping motor. The scanning distance is determined by the number of the step signals from the CB to M2.

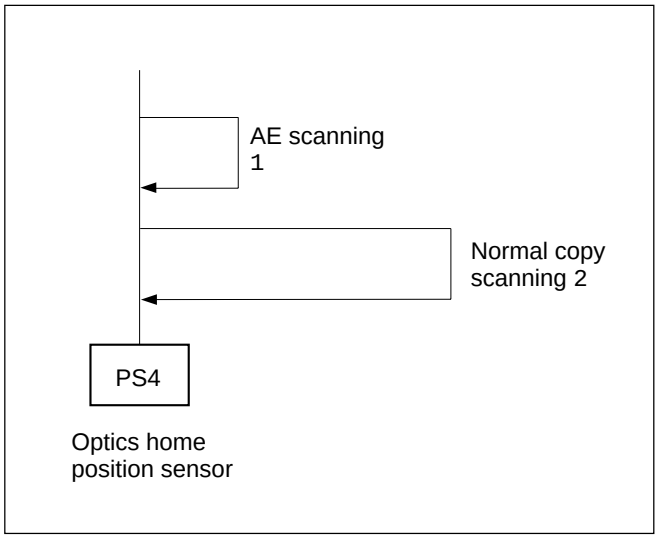
a. Exposure unit home position search

When the main switch is turned ON and the exposure unit is not at the home position, the home position of the exposure unit will be automatically searched.



b. AE scanning

When pressing the copy button with the AE mode selected, the exposure unit performs AE scanning before normal copy scanning.



c. Scanning speed

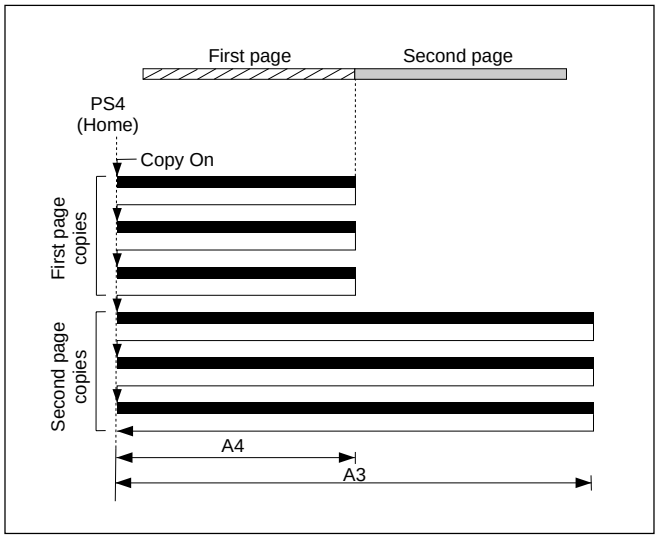
AE scanning	Forward scan	250 mm/sec
	Return	450 mm/sec
Normal copy scanning	Forward scan	145.5 mm/sec (when life size)
	Return	450 mm/sec

d. Book copy mode

(1) When A4 or B5 paper size is selected

The first page of the book is copied continuously in the set copy quantity with the paper fed in ordinary timing. Then, a second page is copied according to the following sequence. The exposure lamp is lit at the home position so that the first and second pages will be scanned. (If the A4 size paper is selected, the A3 size copy is performed. If the B5 size is selected, the B4 size copy is performed.) However, a paper is fed at the moment the exposure lamp comes on a second page so that only a second page is copied.

The illustration below is the scanning example using the A4 size paper in 3 copies.



e. Bypass feed unit used

When the continuous copies is selected, the original is copied using a full length scan for the first paper. The PS2 (pre-shutter sensor) detects the first paper size so that the real paper length can be scanned from the second paper and after.

f. Universal tray used

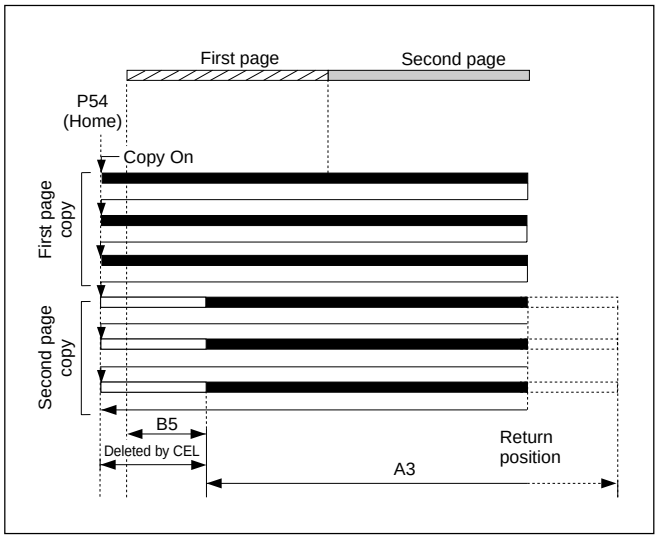
Regardless of the size, the original is copied using a full length scan for all papers.

(2) When the paper other than A4 or B5 size is selected

The first page of the book is copied continuously in the set copy quantity with the paper fed in ordinary timing. At this time the selected paper length is copied.

Then a second page is copied according to the following sequence. The exposure lamp is lit at the home position to start scanning, but simultaneously the CEL is lit to erase the charge in B5 paper length. After the CEL has been turned off, the scanning is continued until the selected paper length is copied. If the A3 size paper is selected, the copy of B5 plus A3 size length is planned, however, the returning operation completes when the exposure unit reaches the Max. scanning position.

The illustration below is the scanning example using the A3 sized paper in 3 copies.



2. Signals

a. Input signals

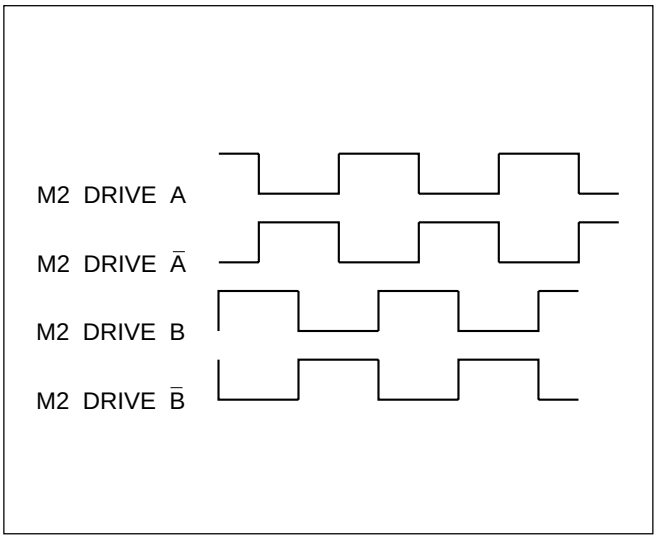
(1) PS4 (PS4→CB)

This is the exposure unit home position detection signal.
[L] : The exposure unit is in the PS4 (home position).
[H] : The exposure unit is not in the PS4 (home position).

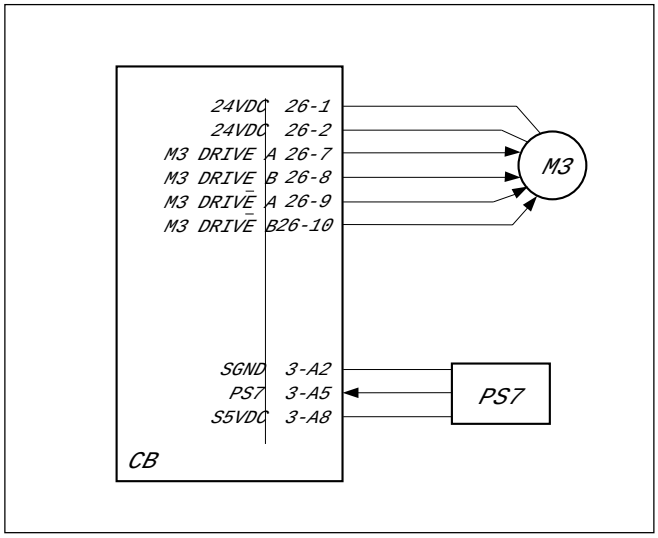
b. Output signal

(1) M2 DRIVE (CB→M2)

This is a step signal which turns each phase of M2 ON and OFF. A number of M2 rotation proportional to a numer of pulses is determined.



[5] M3 (Lens Drive) Control



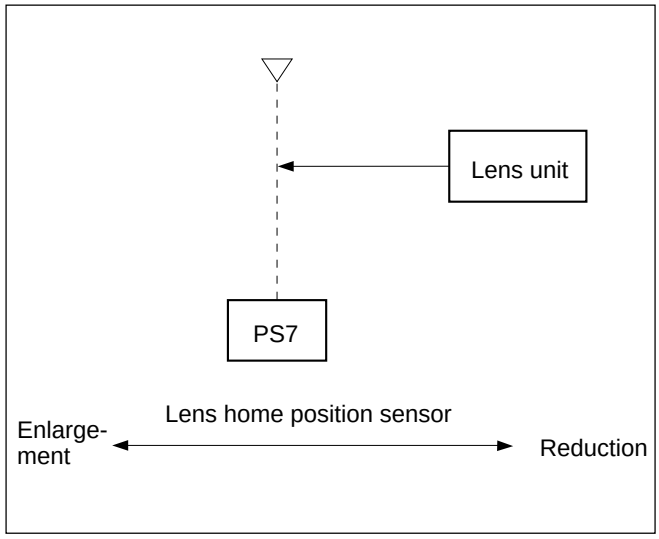
The lens unit is moved by M3 (lens drive). M3 is driven by step signals from the CB (control board). The lens 1:1 position is detected by PS7 (lens home position).

1. Operation

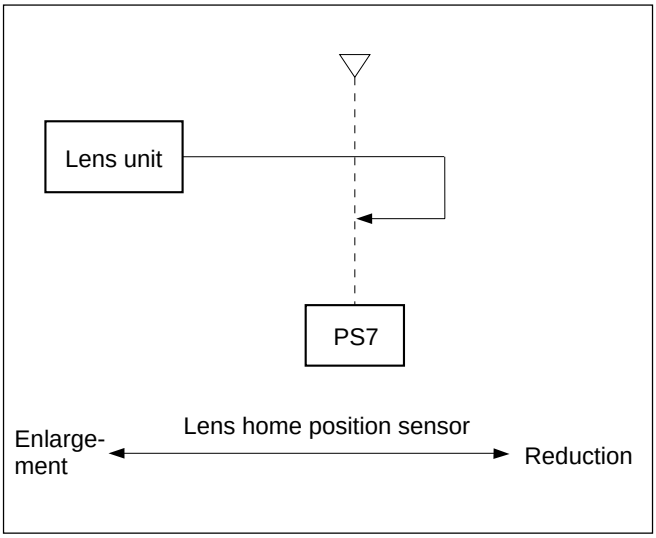
M3 is a 2-phase stepping motor. The distance moved by the lens unit is determined by the number of the step signals from the CB.

a. Initial operation when the machine or AUTO button is switched ON

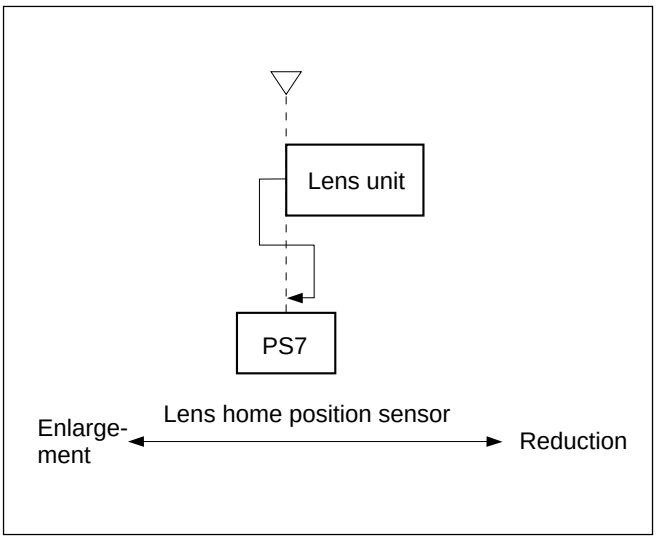
(1) When the lens unit is on the reduction side



(2) When the lens unit is on the enlargement side



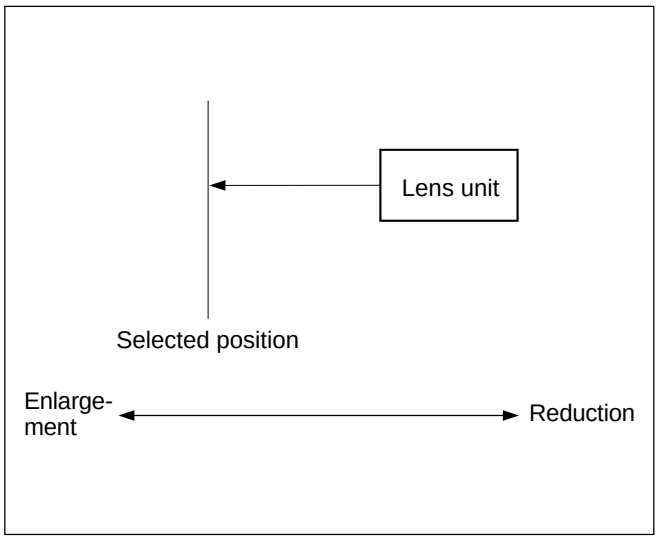
(3) When the lens unit is in the 1:1 position



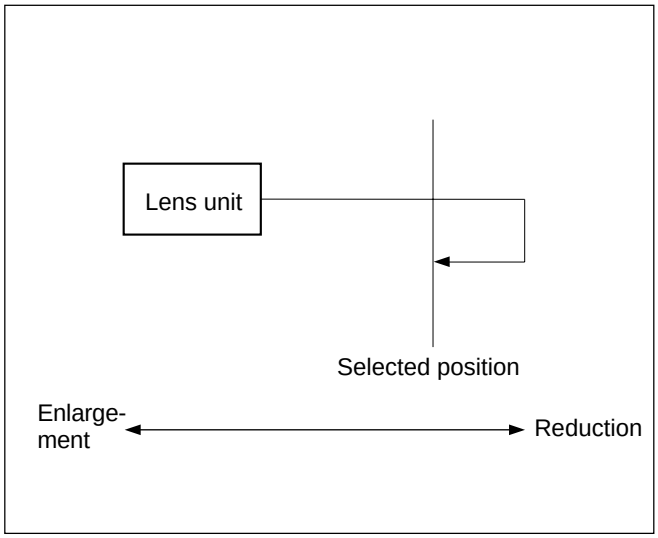
b. Operation when a magnification is selected

The difference between the specified magnification and present magnification is read, and a number of pulses corresponding exactly to this difference is output from the CB, causing M3 to rotate.

(1) When the lens unit is on the right of the selected position



(2) When the lens unit is on the left of the selected position



2. Signal

a. Input signal

(1) PS7 (PS7→CB)

This is the lens unit home position detection signal.

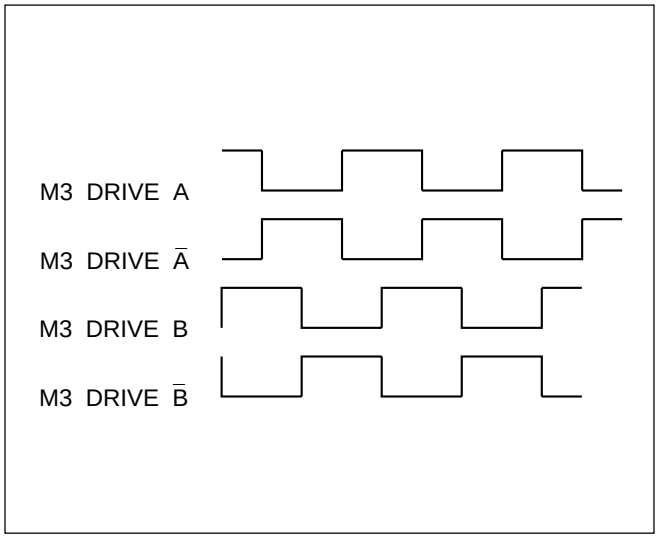
[L] : The lens unit is in the enlargement position.

[H] : The lens unit is in the 1:1 or reduction position.

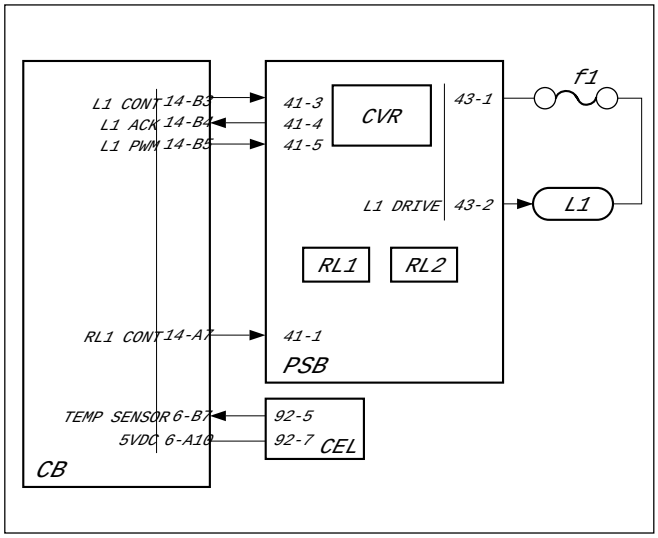
b. Output signal

(1) M3 DRIVE (CB→M3)

This is a step signal which turns each phase of M3 ON and OFF. The moving distance of the lens unit proportional to a number of pulses is determined.



[6] Exposure Lamp Control



L1 (exposure) is supplied with power by the CVR (Constant voltage regulator) inside the PSB (power supply board) which is controlled by the CB (control board).

1. Operation

a. L1 light intensity control

The light intensity of L1 varies according to the output voltage from the CVR circuit in PSB (power supply board). The CVR circuit outputs a voltage proportional to the voltage of the L1 PWM signal from the CB.

b. Light intensity correction

During a normal exposure, the output voltage from the CVR circuit is corrected according to the selected magnification, temperature inside the machine, selection of photograph mode, and copy count. The temperature is detected by the temperature sensor on the CEL.

Item	CVR output	L1 PWM output
Normal exposure	80 to 156 Vrms (Value varies according to the temperature inside the machine, copy count, selection of photograph mode, and selected magnification.)	0 to10 V

c. Light intensity adjustment

Changing the output voltage of the CVR can adjust the light intensity. Using the 36 mode, code 90, the output voltage of CVR can be changed within the range of 80 Vrms to 156 Vrms.

Refer to the diagnostics section for details.

d. Fault protection

- Hardware timer circuit

  If L1 remains ON continuously for at least 15±5 seconds for some reason or other, the hardware timer of the CVR in PSB will function, switching RL1 and RL2 (Main 1 and 2) OFF. Consequently, power to the AC loads including L1 will be cut off.
- Temperature fuse

  If the temperature of L1 rises to a certain value, f1 (Optics temperature fuse) will blow, cutting off the power to L1.

  f1 melting temperature: 169°C

2. Signals

a. Input signals

(1) L1 ACK (PSB→CB)

This signal is used to inform the CB of the ON or OFF state of L1.

[L] : L1 OFF

[H] : L1 ON

(2) TEMP SENSOR (CEL→CB)

This analog signal is used to inform the CB of the temperature inside the machine detected by the temperature sensor on the CEL.

b. Output signals

(1) L1 CONT (CB→PSB)

This control signal is used to turn L1 ON or OFF.

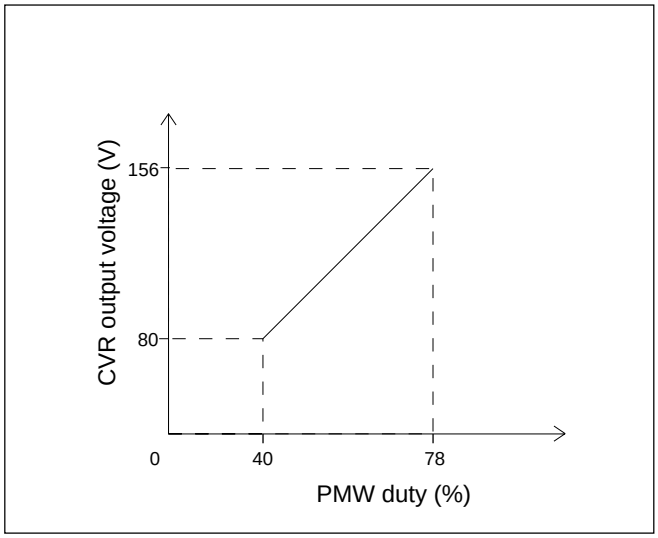
[L] : L1 ON

[H] : L1 OFF

(2) L1 PWM (CB→PSB)

This analog signal is used to determine the output voltage (CVR output voltage: L1 DRIVE) to L1.

The illustration below indicates the relationship between the L1 PWM signal and CVR output voltage.

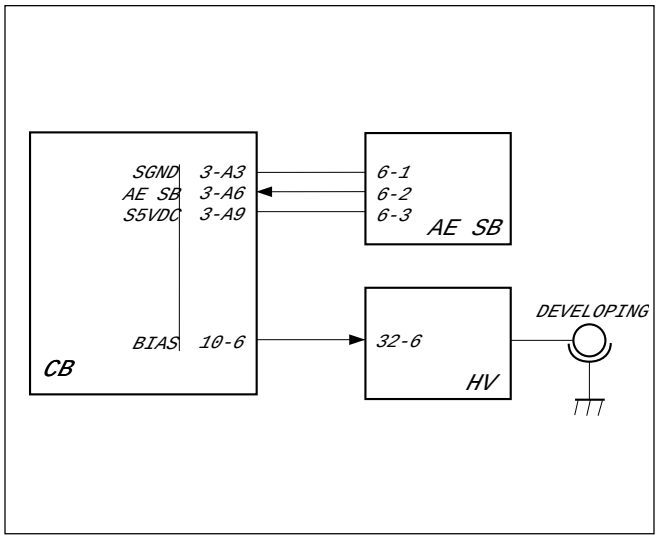


(3) RL1 CONT (CB→PSB)

This signal is used to control RL1 and RL2 (Main 1 and 2) in the PSB.

It becomes [H] in the event that an abnormality occurs in the machine, causing RL1 and RL2 to be turned OFF.

[7] AE Control



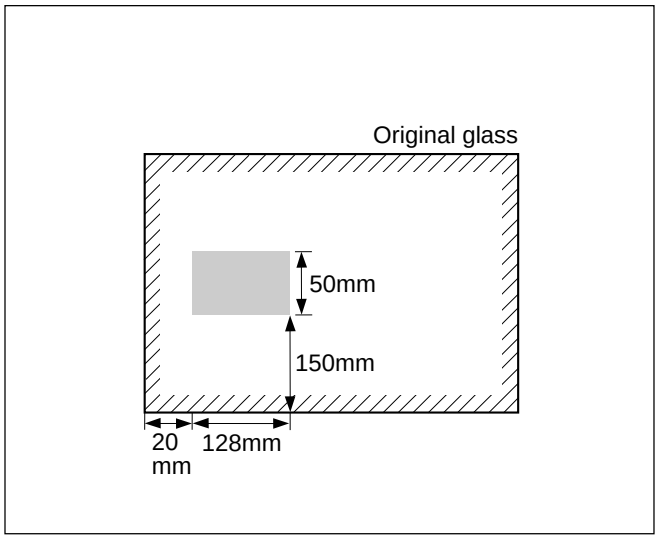
AE control is performed when the CB (control board) processes the signal read by the AE sensor when the AE scan is performed.

1. Operation

a. AE detection operation

When the AE mode is selected and the copy button is pressed, the optics unit starts the AE scan. At this time, the AE sensor reads the light reflected off the original, and a corresponding analog voltage is output to the CB. The CB judges the original density from the output voltage, selects the optimum bias voltage, and sends this bias signal to the HV (high voltage unit). This signal allows the HV to output the bias voltage to the developing unit.

This AE sensor measures the density of the original in the location indicated in the illustration below.



AE scanning speed: Forward scan: 250 mm/sec
Return: 450 mm/sec

b. Bias output

Following 4-step bias voltages are generated depending on the density of originals.

Density		Darker ⟺ Lighter			
		L3	L0	L1	L2
Dark	1	0	– 40	– 60	– 80
⇑	2	– 40	– 80	– 100	– 120
	3	– 80	– 120	– 140	– 160
Normal	4	– 130	– 150	– 180	– 200
⇓	5	– 150	– 180	– 220	– 240
	6	– 180	– 230	– 260	– 280
Light	7	– 230	– 280	– 280	– 280

c. AE mode canceling

The AE mode is canceled when the density selection button is depressed.

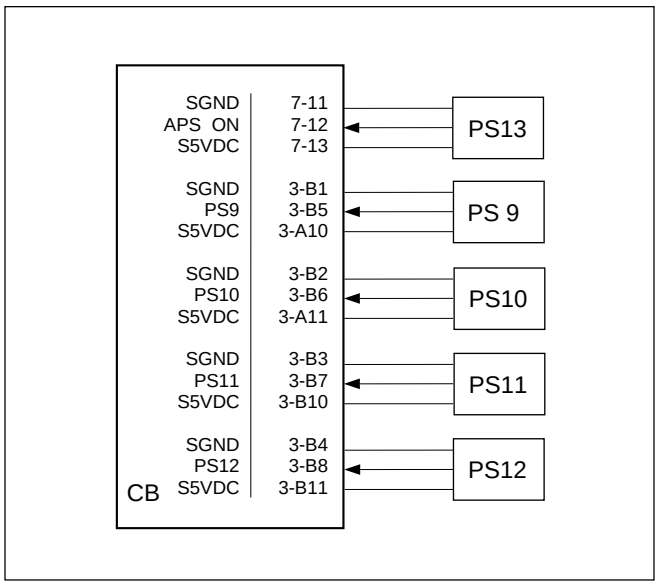
2. Signals

a. Input signal

(1) AESB (AESB → CB)

Analog voltage signal changing depending on a light amount of reflected light received

[8] APS Control

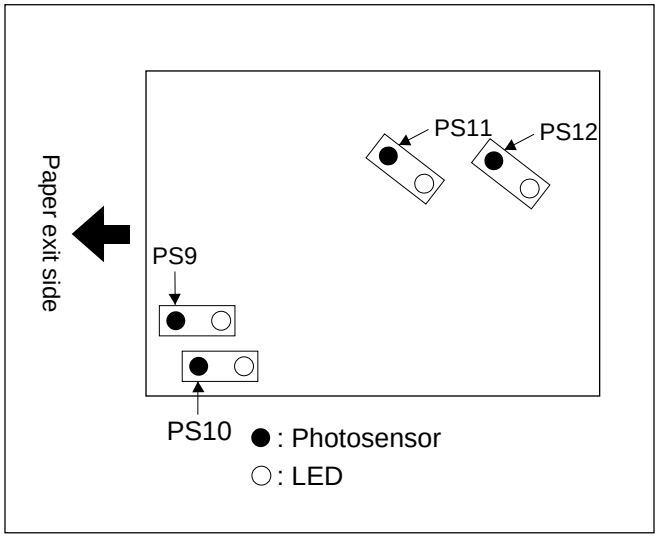


APS is carried out when the signals read by the APS sensor when the original cover is opened or closed are processed by CB (control board).
Related signal includes PS13 (APS timing).

1. Operation

a. APS detection operation

The paper size is detected by ON/OFF combination of PS9 (APS (within width)), PS10 (APS (outside width)), PS11 (APS (within length)) and PS12 (outside length) in APS detection. The APS sensor is composed of LED and a photosensor. Detection of the paper size is carried out when light emitted from each LED is reflected on the original and the reflected light is received by the photosensor.



The relation between each sensor and the paper size is as follows.

Sensor / Paper size	PS9	PS10	PS11
A3	ON	ON	ON
	OFF	ON	ON
	OFF	ON	OFF
B4	ON	OFF	ON
A4	ON	ON	OFF
B5	ON	OFF	OFF
A4R	OFF	OFF	ON
* B5R or B6R	OFF	OFF	OFF

* Select either size with DIP switch on 25 mode.

b. APS detection timing

When the original cover (platen/ADF) is closed, PS13 is turned ON and the size of the original set is detected by PS9 - PS12.

Note:

(1) Established data are stored in the backup memory (non-volatile memory). Therefore, the original size information before power supply OFF can be retained despite ON/OFF of power supply on the machine, provided that the fixing temperature is not lower than 50˚C.

(2) When the original cover is not opened or closed at all after the power supply for the machine is turned ON, the original size is judged as the maximum original size.

2. Signals

a. Input signal

(1) PS9 (PS9 → CB)
Paper size (within width) detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

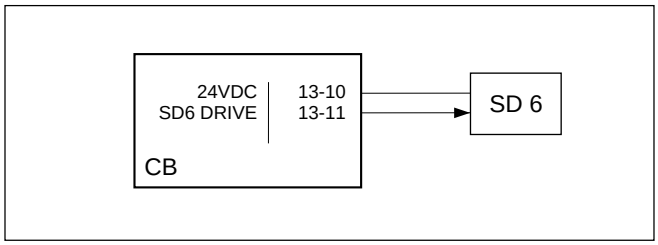
(2) PS10 (PS10 → CB)
Paper size (outside width) detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

(3) PS11 (PS11 → CB)
Paper size (longitudinal) detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

(4) PS12 (PS12 → CB)
[L]: Paper is detected.
[H]: Paper is not detected.

(5) PS13 (PS13 → CB)
Detection signal for opening/closing of original cover
[L]: ON (APS execution)
[H]: OFF (APS canceling)

[9] SD6 (radiation solenoid) control



The radiation shutter is opened and closed by the SD6(radiation solenoid). SD6 is controlled by the drive signal from the CB(control board).

1. Operation

a. During idling

During idling, SD6 is OFF and the radiation shutter is opened.

b. During M1 (main motor) is On

When M1 is turned ON, SD6 is energized by the drive signal from the CB to close the radiation shutter.

2. Signal

a. Output signal

(1) SD6DRIVE (CB → SD6)

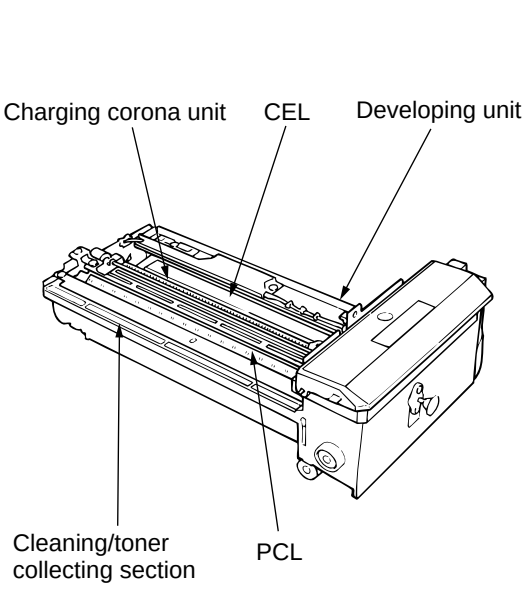
This is the ON/OFF signal for SD6.

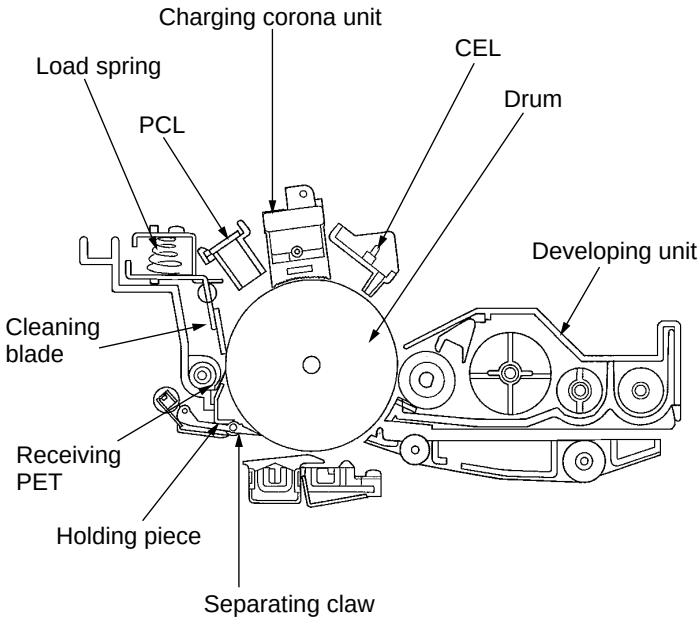
[L]: SD6 ON

[H]: SD6 OFF

DRUM CARRIAGE UNIT

[1] Construction

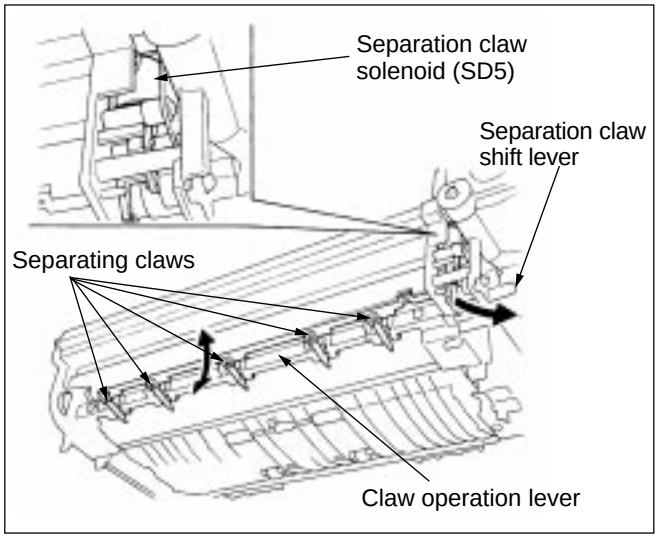




[2] Mechanism

Mechanism	Method
Carriage support	Fixed rail
CEL	LED
PCL	LED
*1 Auxiliary separation	Separation claws

On this drum unit, the drum is surrounded by the following items: charging corona/CEL/PCL unit, developing unit, cleaning unit, toner collection unit, and second/third paper feed driven roller unit.



*1: **Auxiliary separation**
The five separation claws prevent paper jams by separating the paper from the drum after the transfer process.
The claws are pressed or released from the drum when the separating claw solenoid (SD5) turns ON or OFF, respectively.
Also drum scratch is prevented by changing the separation claw position with the separation claw shift lever at every periodial mentenance.

[3] Disassembly and Assembly

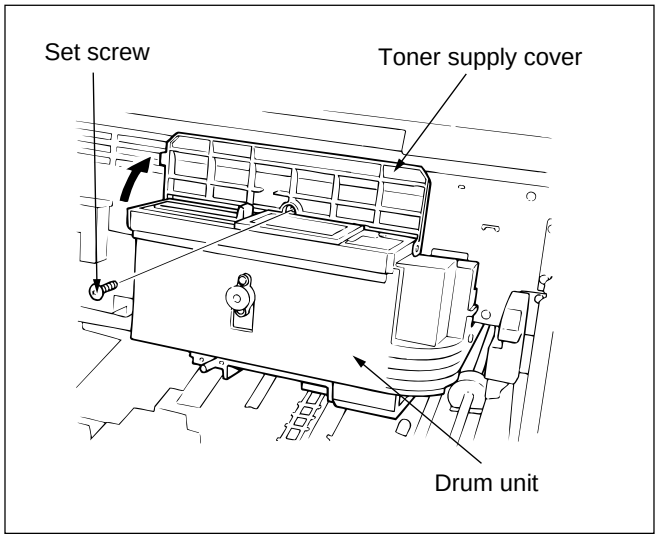
1. Removing/reinstalling the drum unit

Cautions:

1. Always cover the drum with a drum cover and store in a dark place whenever removing the drum carriage.
2. When installing the drum unit, ensure that the charge wire cleaning knob is pushed thoroughly into the unit.
3. Install or remove holding both edges of the pedestal prevent to touch the drum.

a. Procedure

(1) Open the front door, then pull up the main body separating lever to open the upper body.
(2) Open the toner supply cover of the toner box.
(3) Remove the drum unit set screw, then slowly pull the drum unit out.



(4) Reinstall the removed parts by reversing the procedure described above.

2. Removing/reinstalling the PCL

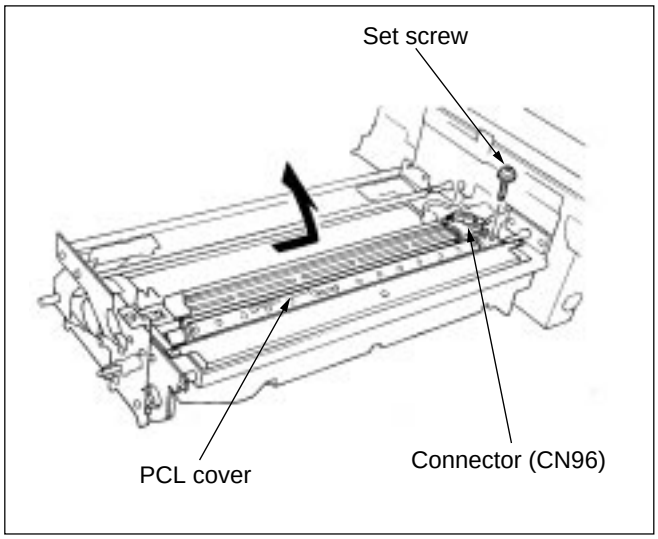
Cautions:

When installing the PCL board, follow the notes below.

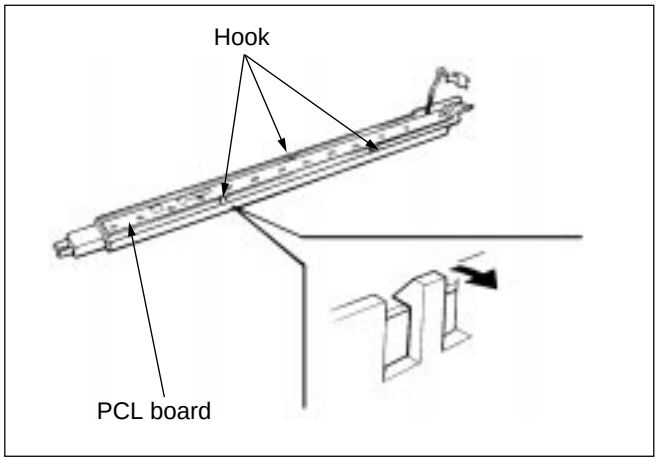
1. Lock the board using the hooks.
2. Route the wire through the wire hook of the PCL cover.
3. Align the tabs of the cover with the holes of the unit.

a. Procedure

(1) Open the upper main body, then remove the drum unit.
(2) Disconnect CN96 from the PCL board.
(3) Remove the wires from the wirehook on the PCL cover.
(4) Remove the set screw, then remove the PCL cover in an upward direction.



(5) Unhook the PCL cover in three places, then remove the PCL board.

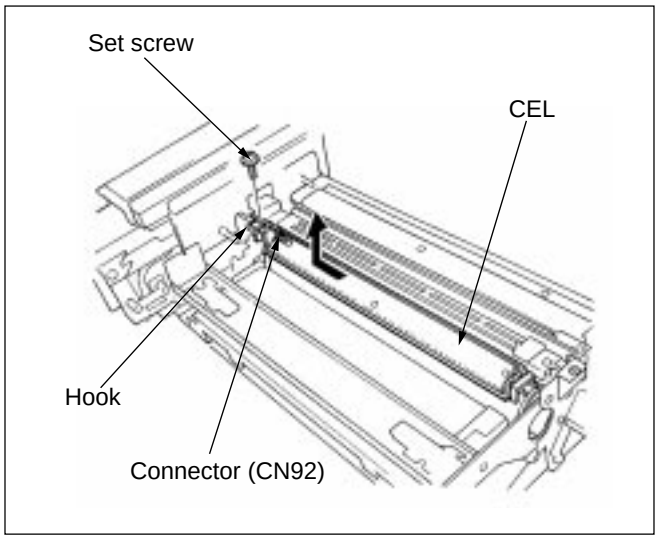


(6) Reinstall the removed parts by reversing the procedure described above.

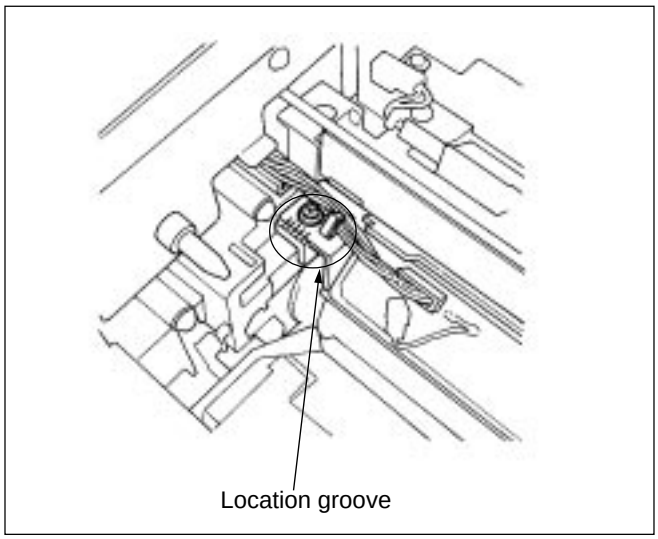
3. Removing/reinstalling the CEL

a. Procedure

(1) Open the upper main body, then remove the drum unit.
(2) Disconnect CN92.
(3) Remove the wires from the hook of the CEL cover.
(4) Remove the CEL cover set screw, then remove the CEL in an upward direction.



(5) Reinstall the removed parts by reversing the procedure described above, noting the following.
- Align the location grooves of the CEL cover and the charging corona unit.



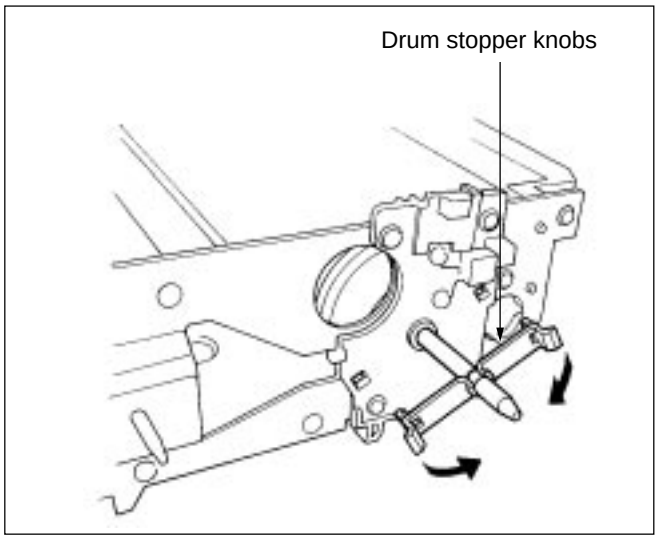
4. Removing/reinstalling the drum

Cautions:

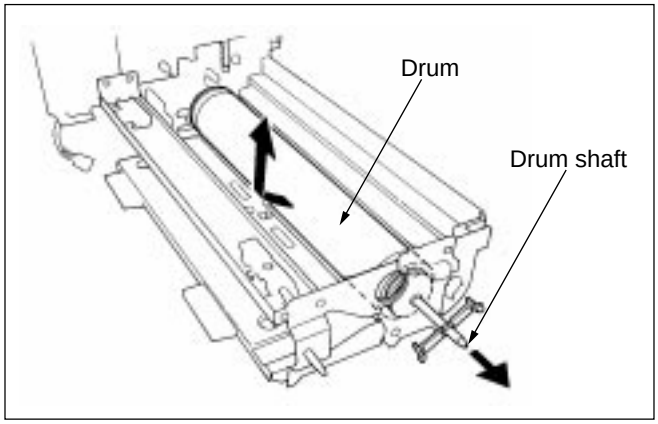
1. When removing the drum and the cleaning blade, do not touch them with bare hands or scratch them in any way.
2. When the drum is outside of the drum unit, always cover it with a drum cover and store it in a dark place.
3. When installing a new drum, always reset the drum counter using mode 47-91. Also perform a copy image check (refer to the adjustment section for details).

a. Procedure

(1) Open the upper main body, then remove the drum unit.
(2) Remove the charging corona unit, cleaning blade, and developing unit. (refer to each individual section for removal instructions.)
(3) Unhook the drum stopper knobs as shown below.



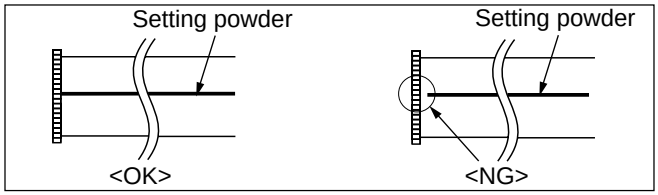
(4) Pull the drum shaft out of the unit.
(5) Hold both ends of the drum with your finger tips and lift it upward.
Take care not to scratch the drum.



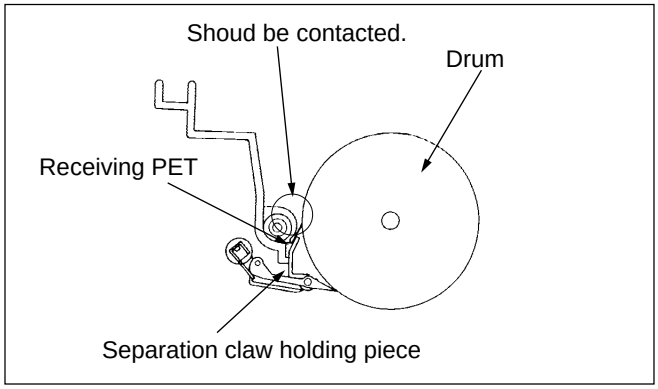
(6) Reinstall the removed parts by reversing the procedure described above, noting the following:

Cautions:

1. Apply setting powder to the drum (whole surface when replacing, ene-third when resetting.) and rotate it in the opposite direction.
Then, rotate in the normal direction and ensure that setting powder of the surface is as shown below.



2. When installing the drum shaft, ensure that the grooved side is facing the opposite side of the toner box.
3. After the drum has been reinstalled, verify that both edges of the receiving PET of the separation claw holding piece are contacted with the drum surface. If not, toner leakage may occur.



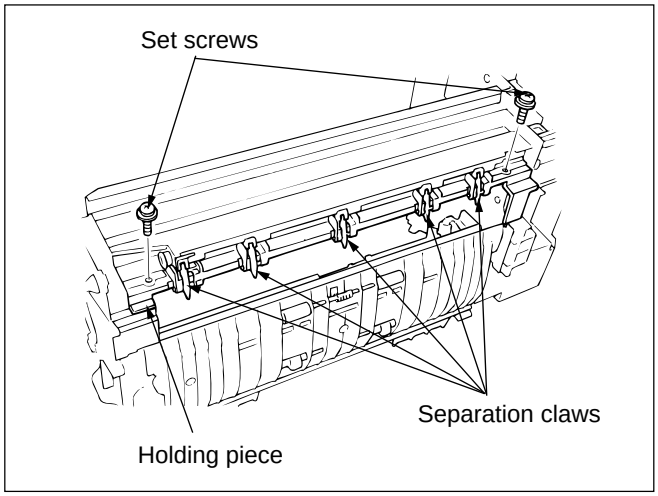
5. Removing/reinstalling the separation claws

Cautions:

1. When removing the separation claws, the drum must be removed first. For cautions when handling the drum, refer to the drum removal section.
2. Make sure to reinstall the separation claws in the proper direction.
3. Do not touch the cleaning blade with bare hands.

a. Procedure

(1) Open the upper main body, then remove the drum unit.
(2) Remove the drum from the drum unit.
(3) Remove the 2 set screws, then remove the separation claws holding piece.
(4) Remove the 5 separation claws.



(5) Reinstall the removed parts by reversing the procedure described above.

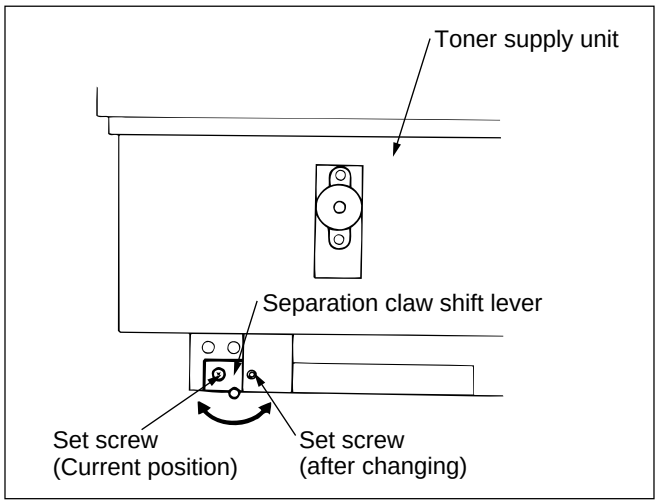
6. Changing the separation claw installation position

Note: Perform this operation every periodical mentenance.

a. Procedure

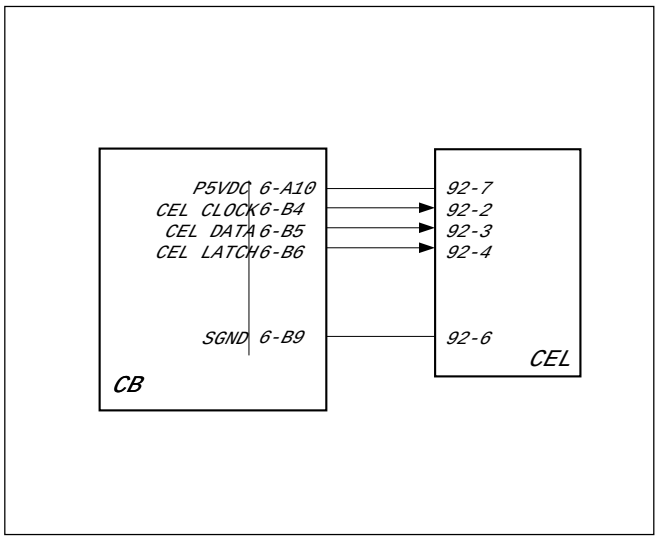
(1) Open the front door, then pull up the main body separating lever to open the upper body.

(2) Remove the set screw, then move the separation claw shift lever to the opposite side and secure with the set screw.



(3) close the upper main body and front door.

[4] CEL Control



The CEL (charge elimination lamp) consists of 52 LEDs. Each of these LEDs is switched ON or OFF according to the serial data output from the CB (control board), in order to erase the charge outside the effective image area.

1. Operation

a. CEL ON/OFF pattern

The CEL has two ON/OFF patterns as follows:

Items	CEL ON/OFF pattern
All LEDs lit	LEDs lit for charge erasure at lead edge of image: Charges are erased to form a blank margin at the lead edge of the image.
	All LEDs lit: The charges after the image has been scanned are erased to prevent excess toner from adhering to the drum during a copy process.
LEDs lit for charge erasure in non-image area	The charges outside the area that are determined by the cassette size and magnification are erased.

b. Number of LEDs lit

(1) All LEDs lit
All LEDs are lit.

(2) LEDs lit for charge erasure in non-image area
The number of LEDs lit depends on the paper size and magnification.

- Number of LEDs lit depending on the paper size

Paper size	Number of LEDs lit
A3/A4	0
B4/B5	4
A4R	8
B5R	16
A5	13
F4	7
11 × 17	4
8-1/2 × 14	14
8-1/2 × 11	4
8-1/2 × 11R	14
5-1/2 × 8-1/2	18
SPECIAL	0

- Number of LEDs lit depending on the magnification

Magnification	Number of LEDs lit
0.50 to 0.52	26
0.53 to 0.56	24
0.57 to 0.61	22
0.62 to 0.65	20
0.66 to 0.69	18
0.70 to 0.73	16
0.74 to 0.77	14
0.78 to 0.81	12
0.82 to 0.85	10
0.86 to 0.89	8
0.90 to 0.93	6
0.94 to 0.97	4
0.98 to 0.99	2
1.00	0

* When using the enlargement mode, the number of LEDs that are lit varies according to the paper size.
* In the 1:1 or reduction modes, the lighting pattern for the paper size or magnification will be selected according to whichever is greater.

2. Signals

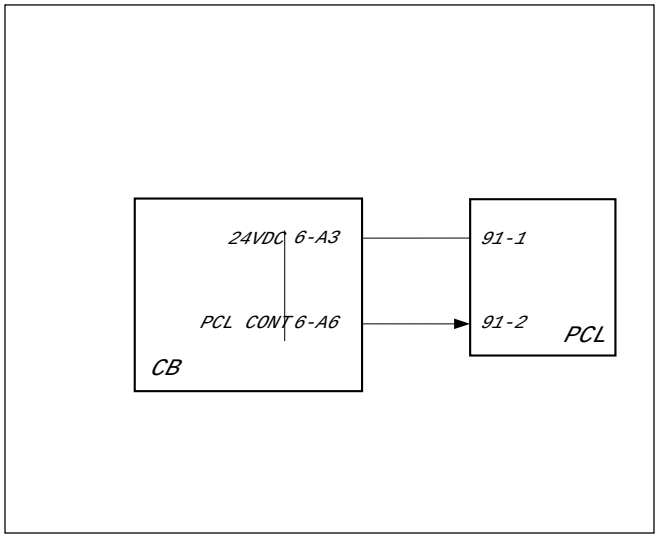
a. Output signals

(1) CEL CLOCK (CB→CEL)
This clock signal is used to transfer CEL DATA.

(2) CEL DATA (CB→CEL)
This is the LED ON data. It is input serially in synchronism with CEL CLOCK.

(3) CEL LATCH (CB→CEL)
This signal is used to output CEL DATA.
This signal causes the LED, specified by the CEL DATA signal, to light.

[5] PCL Control



14 LEDs are used for the PCL (pre-charging lamp) which are controlled by the CB (control board).

1. Operation

The PCL is turned ON or OFF in synchronism with the main motor (M1).

2. Signals

a. Output signal

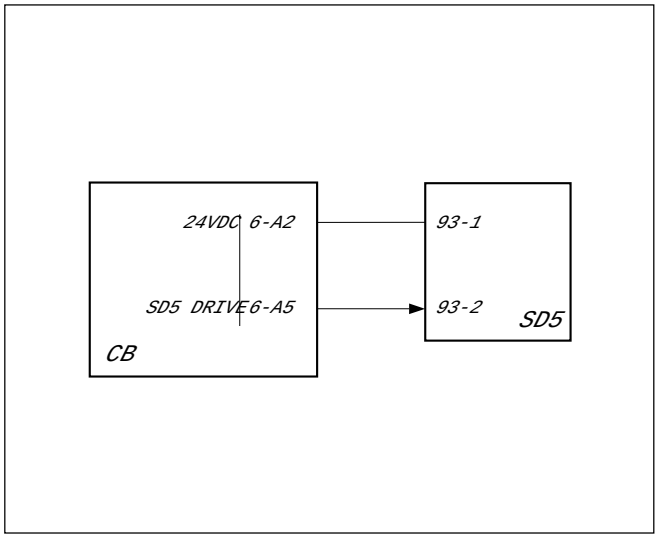
(1) PCL CONT (CB→PCL)

This control signal is used to turn PCL ON or OFF.

[L] : PCL ON

[H] : PCL OFF

[6] Separation Claw Control



The separation claws are driven by SD5 (separation claws) which are controlled by the CB (control board).

1. Operation

When the separation discharge occurs, SD5 is turned ON, causing the separation claws to touch the drum and enable the paper to separate more easily.

a. Timing

SD5 is turned on after the fixed period from when SD3 (resist solenoid) has been turned ON.

Then SD4 is turned OFF after 150 ms.

2. Signal

a. Output signal

(1) SD5 DRIVE (CB→SD5)

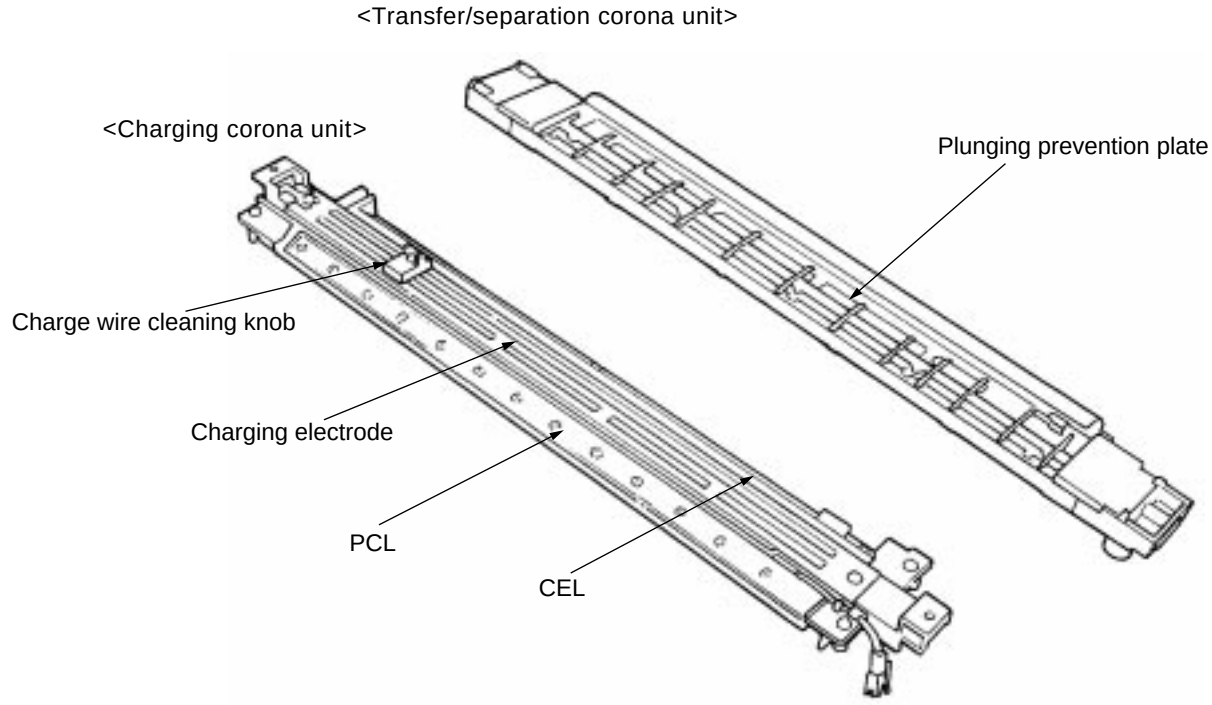
This control signal is used to drive the SD5.

[L] : SD5 ON

[H] : SD5 OFF

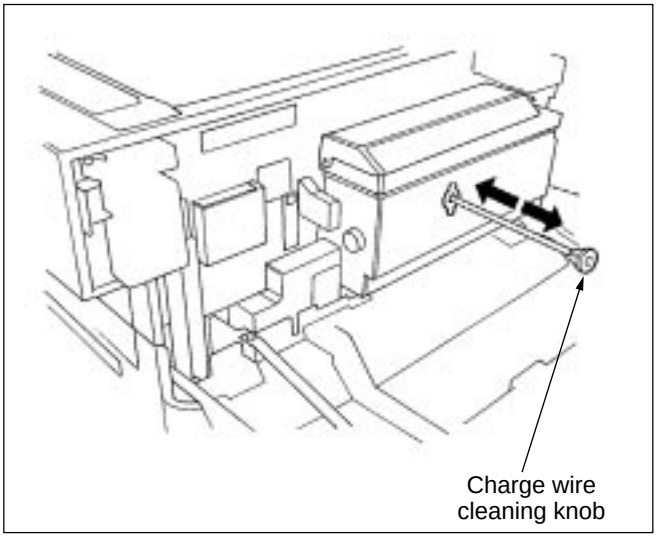
CORONA UNIT

[1] Construction



[2] Mechanism

	Mechanism	Method
*1	Charging	Scorotron (DC negative corona discharge) Discharge wire:Tungsten ϕ0.06 mm Grid wire: Stainless ϕ0.1 mm With wire cleaning feature.
	Transfer	DC negative corona discharge Discharge wire:Tungsten ϕ0.08 mm
	Separation	AC corona discharge together with separating claws Discharge wire: Tungsten ϕ0.08 mm



***1: Charge wire cleaning**

The charge corona wire is equipped with a cleaning mechanism.

Dirt on the wire can be removed by moving a charge wire cleaning knob back and forth.

Caution: Always push the knob thoroughly into the unit after cleaning.

[3] Disassembly and Assembly

1. Removing/reinstalling the charging corona unit

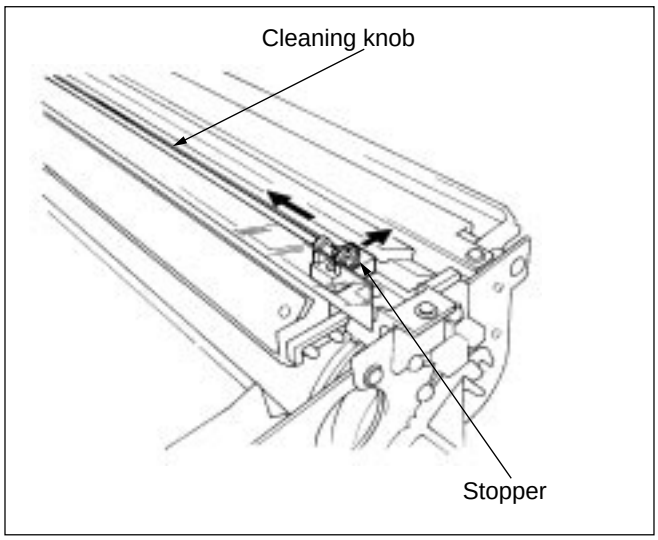
Cautions:

1. Always cover the drum with a drum cover and store it in a dark place whenever removing the drum carriage.
2. When installing the drum unit, ensure that the charge wire cleaning knob is pushed thoroughly into the unit.

a. Procedure

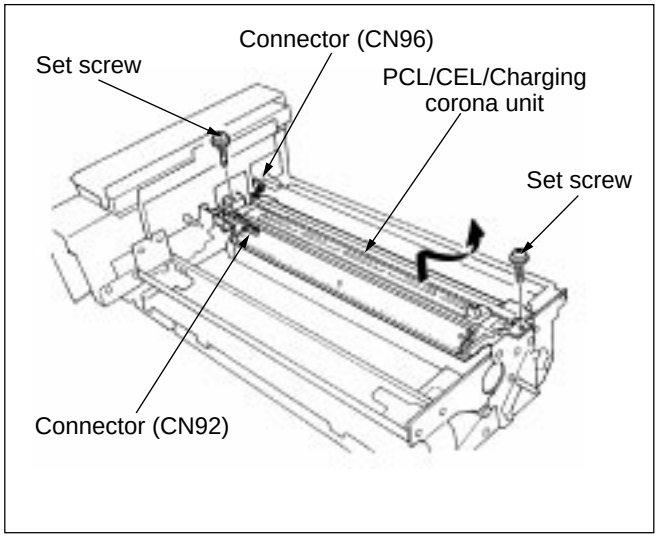
(1) Open the upper main body, then remove the drum unit. (Refer to the drum carriage unit section for removal instructions.)

(2) Remove the stopper, then remove the cleaning knob.



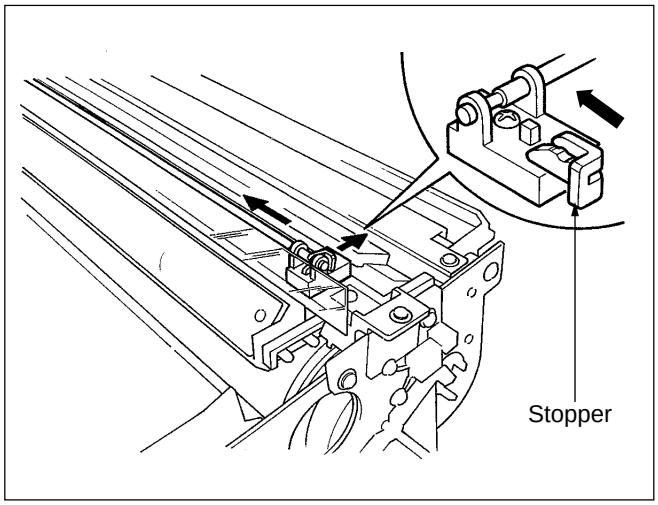
(3) Disconnect the 2 connectors (CN92 and CN96).

(4) Remove the 2 set screws, then remove the PCL/CEL/charging corona unit as an assembly from the drum unit.



(5) Reinstall the removed parts by reversing the procedure described above, noting the following.

- Install position for stopper.



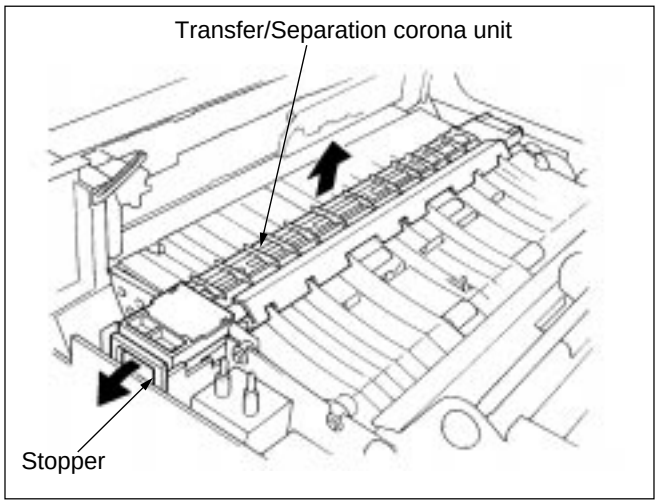
2. Removing/reinstalling the transfer/separation corona unit

Note: After installation, press the rear side of the transfer/separation corona unit down to lock it securely.

a. Procedure

(1) Open the front door, then pull up the main body separating lever to open the upper body.

(2) Pull the unit stopper toward the front of the unit, then remove the transfer/separation corona unit in an upward direction.



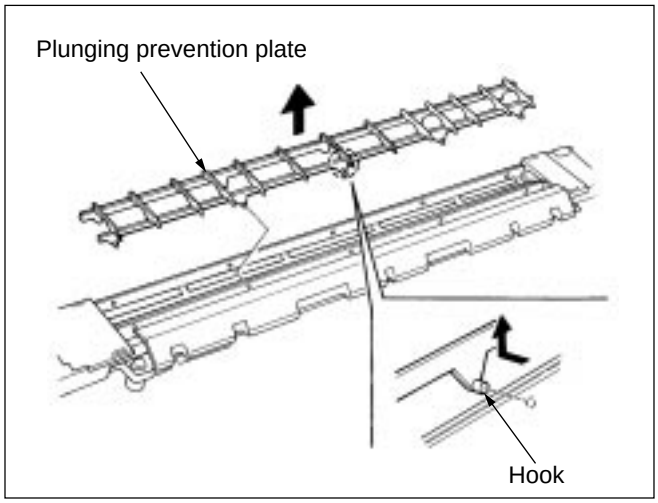
(3) Reinstall the removed parts by reversing the procedure described above.

3. Removing/reinstalling the plunging prevention plate

a. Procedure

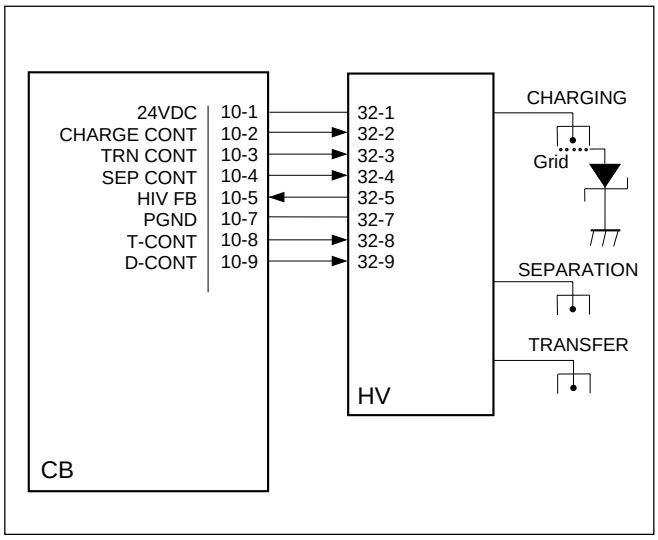
(1) Remove the transfer/separation corona unit.

(2) Unhook the plunging prevention plate in 5 places, then remove it.



(3) Reinstall the removed parts by reversing the procedure described above.

[4] Charging, Transfer/Separation Control



The operation of the high voltage (HV) unit which performs charging, transfer, and separation, is controlled by control signals from the CB (control board). It outputs a high voltage to each wire. A grid voltage for the charging unit is controlled by the Zener diode.

1. Operation

a. Charging

A scorotron charging method is used. In this method, 24VDC input from the CB is boosted to a negative high DC which is discharged.

b. Charging control using the grid voltage

The grid voltage is controlled by the high voltage Zener diode.

c. Transfer

The transfer process uses a negative high DC.

d. Separation

The separation process uses a high AC voltage.

2. Signals

a. Input signal

(1) HIV FB (HV→CB)

If the HV detects a spark, it outputs a [L] signal to the CB.

b. Output signal

(1) CHARGE CONT (CB→HV)
This control signal is used to turn ON or OFF the output for the charging corona unit.
[L] : Charging ON.
[H] : Charging OFF

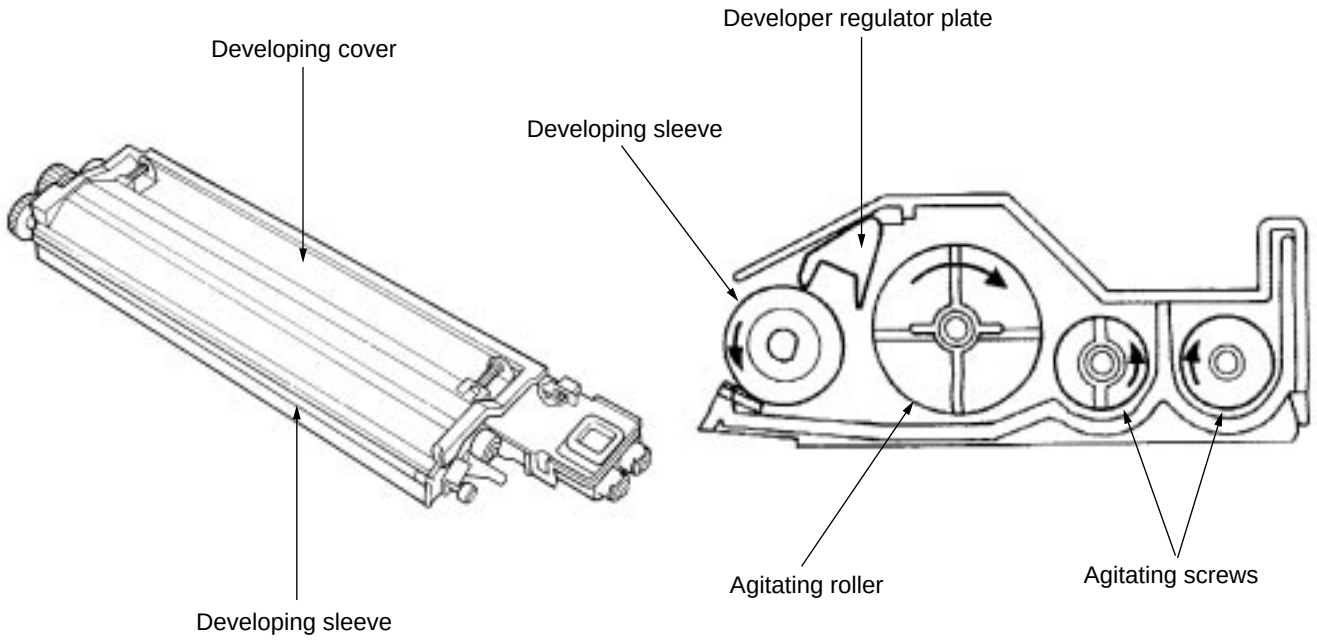
(2) TRN/SEP CONT (CB→HV)
This control signal is used to turn ON or OFF the output for the transfer/separation corona unit.
[L] : Transfer/Separation ON
[H] : Transfer/Separation OFF

(3) T-CONT(CB→HV)
This is the transfer current shift signal.
[L] : Low output
[H] : High output

(4) D-CONT (CB→HV)
This is the separation current shift signal.
[L] : Low output
[H] : High output

DEVELOPING SECTION

[1] Construction



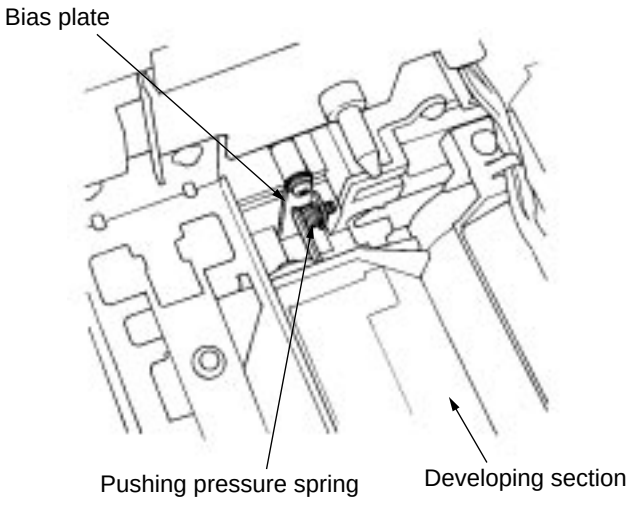
[2] Mechanism

	Mechanism	Method
	Developing	Two component development
*1	Developing bias	DC bias
*2	Developing agitation	Main agitator(agitating roller) Auxiliary agitator(agitating screws)

***1: Developing bias**

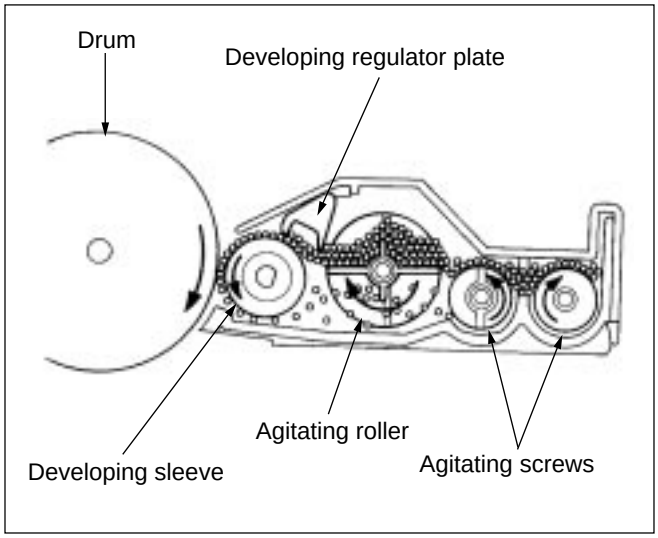
Developing bias is supplied from the bias spring of the HV unit.

The pushing pressure spring on the drum casing receives the bias from the bias spring and passes it along to the bias plate of the developing unit, where it finally reaches the developing sleeve.



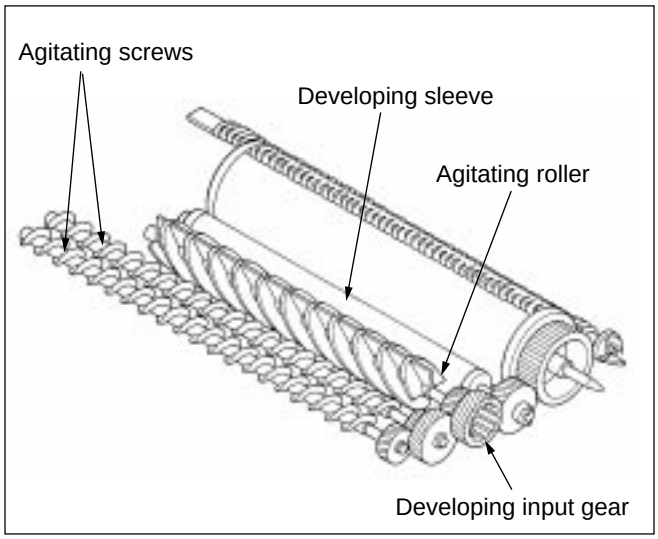
*2: **Flow route of developer**

The agitating roller inside the developing unit supplies developer to the developing sleeve where the developer regulator plate controls the thickness of the toner film. Also developer left on the developing sleeve after developing returns to the agitating roller section to reuse it.



3. Developing unit drive

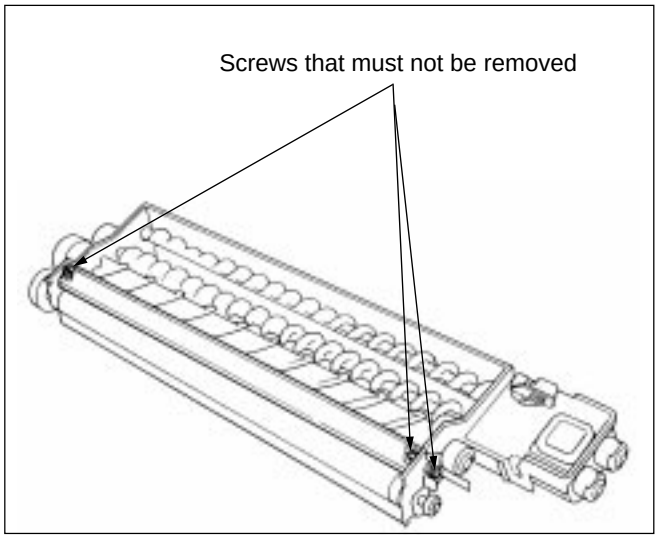
The developing unit is driven by the drum drive motor (M6). Power from the motor is transmitted to the developing input gear to rotate the agitating roller. In turn, the developing sleeve and agitating screw are rotated through the gear for the developing operation.



[3] Disassembly and Assembly

1. Screws that must not be removed

(1) 2 set screws for the developer regulator plate.
(2) The screw for the adjusting knob for magnet angle/ developing bias plate.

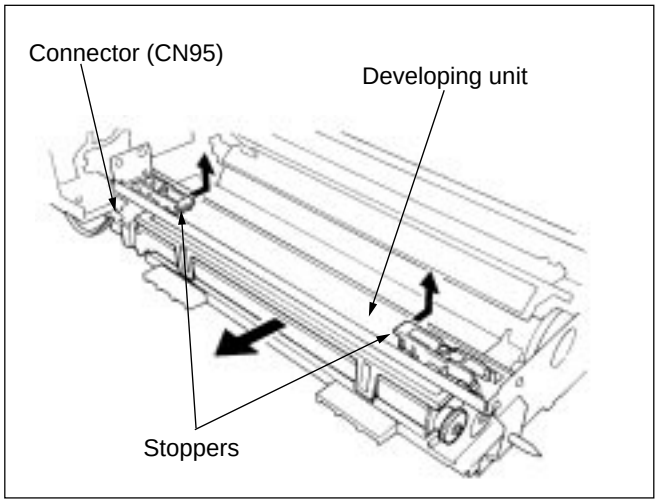


2. Removing/reinstalling the developing unit

Note: When installing the developing unit, ensure that it is held securely with the stoppers.

a. Procedure

(1) Open the upper main body, then remove the drum unit. (Refer to the drum carriage unit section for removal instructions.)
(2) Disconnect CN95 for the toner density sensor.
(3) Press the 2 stoppers of the developing unit toward the drum and lift them up. Pull the developing unit out of the drum unit.

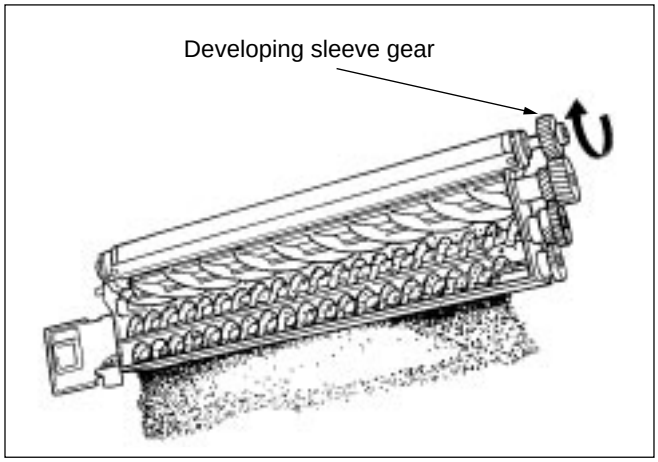


(4) Reinstall the removed parts by reversing the procedure described above.

3. Replacing the developer

Cautions:

1. When replacing the developer, position the developing sleeve upward. Also do not allow foreign particles to enter the developing unit.
2. Do not turn the developing sleeve backward.

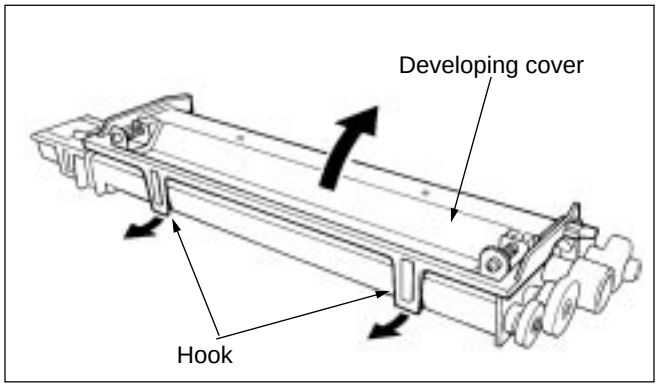


3. After replacing the developer, always perform the toner density adjustment. (Refer to the Diagnostics section for details.)

Note: After replacing the developer, do not supply toner to the toner box until the L detection adjustment is completed.

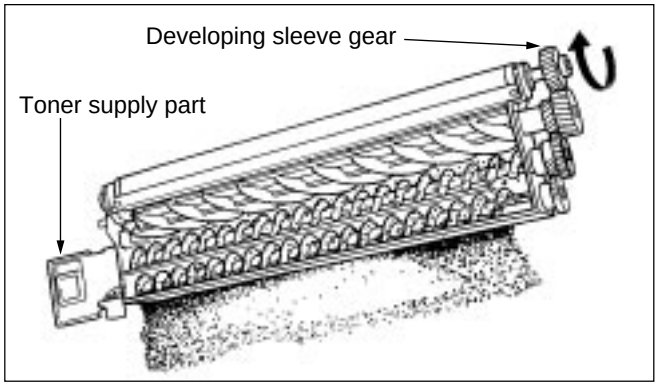
a. Procedure

(1) Open the upper main body, then remove the drum unit. (Refer to the drum carriage unit section for removal instructions.)
(2) Disconnect CN95 for the toner density sensor.
(3) Remove the developing unit from the drum unit.
(4) Unhook the developing cover in 2 places, then remove it in the upward direction.

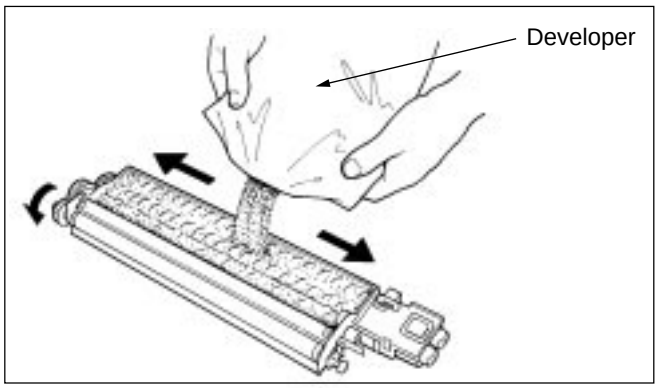


(5) Invert the developing unit and remove the developer out of it.
(6) Tilt the developing unit and turn the developing sleeve gear in the direction of the arrow, shown in the illustration below, to remove all traces of developer in the unit, especially on the sleeve and in the toner supply port.

Note: Avoid getting toner on the gears.

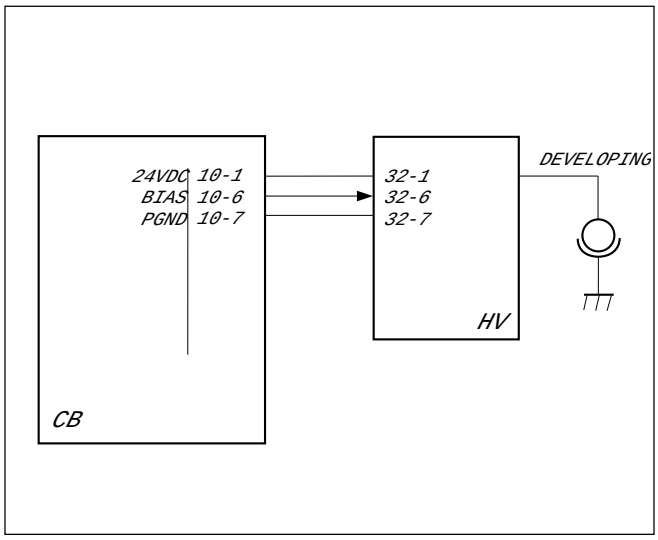


(7) Sprinkle new developer evenly on the agitating roller and screws.
(8) Rotate the developing sleeve gear in the direction of the arrow as shown below so that the developer enters the developing unit.
(9) Repeat steps (7) and (8) until all of the developer has entered the developing unit.



(10) Rotate the developing sleeve gear a few times in the direction of the arrow and ensure that the new developer forms a consistent bristle height over the developing sleeve.
(11) Install the developing cover onto the developing unit, then install the developing unit onto the drum unit.
(12) Connect CN95 for the toner density sensor.
(13) Install the drum unit into the upper main body.

[4] Developing Bias Control



The developing bias is controlled by the CB (Control Board) via the HV (High Voltage) unit.
The bias output level is corrected according to an used period of developer (copy counts).

1. Operation

a. Bias output control

There are two kinds of developing bias outputs as follows:

Item	Bias output
Specified	Specified bias used to develop the image when either the manual mode is selected or the density is selected automatically using the AE function.
Non-image area	Bias output other than when specified bias is used. (–150V)

b. Bias output voltage

* –150VDC is a standard bias.

(Bias shift : at L0)

Selected bias	AE specified bias (V)	Manually specified bias (V)
Dark C	–	–40
Dark B	–	–80
Dark A	–	–120
Normal	–150	–150
Light A	–180	–180
Light B	–230	–230
Light C	–280	–280

c. User bias shift

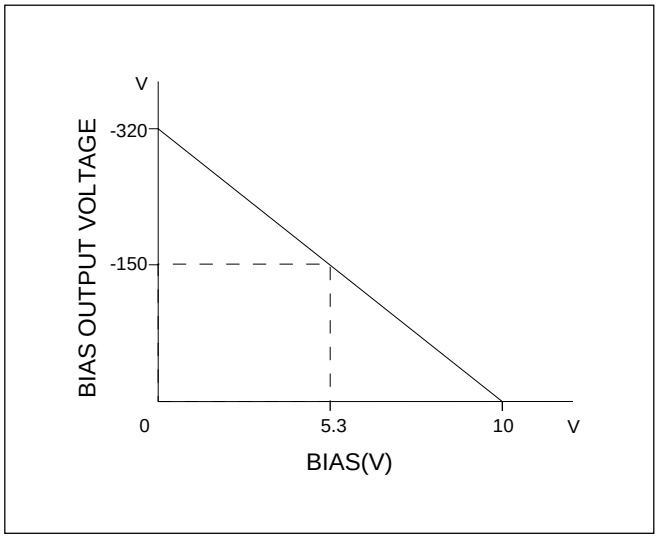
Developing bias (At normal operation)	Indication
–150V	L0
–180V	L1
–200V	L2
–130V	L3

2. Signal

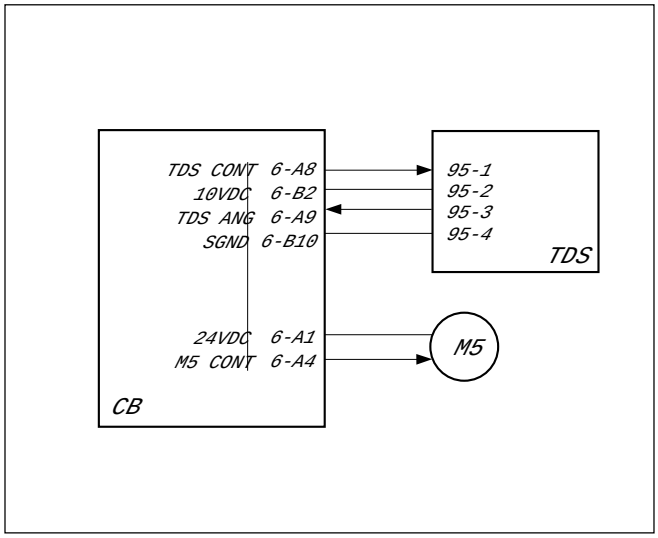
a. Output signal

(1) BIAS (CB→HV)

This signal is used to control the bias output level.
BIAS output range=0 to –320V (64 steps, 5 V/step)
The illustration below indicates the relationship between the BIAS signal and bias output voltage.



[5] Toner Density Control



Toner density is controlled by the TDS (Toner Density Sensor), M5 (toner supply), and CB (Control Board).

1. Operation

a. Toner density detection

The TDS detects toner density as a result of measuring the inductance (L) of the coil built in the TDS, and outputs to the CB an analog signal (TDS ANG) corresponding to the density.

The CB determines the toner supply period by comparing the voltage detected by the TDS to the reference voltage corresponding to the initial density of developer.

b. Toner supply operation

If the detection voltage of the TDS is less than the reference voltage, a control signal will be output from the CB to drive M5, thus supplying toner.

The table below indicates the relationship between the voltage (V_L) detected by the TDS and the toner supply period.

	Toner supply period [msec]		
Paper size / V_L (V)	B5, A5, B6, Post card size Less than 5.5 x 8.5	A4 8.5 x 11	A3, B4 8.5 x 14, 11 x 17
$V_L \geq 1.80$	800	1000	1200
$1.80 > V_L \geq 1.70$	600	700	900
$1.70 > V_L \geq 1.65$	400	500	700
$1.65 > V_L \geq 1.60$	300	400	500
$1.60 > V_L \geq 1.55$	300	300	400
$1.55 > V_L$	0	0	0

V_L: TDS detection voltage

* When the toner supply LED on the operation panel is lit, twice the supply period is required.

2. Signals

a. Input signal

(1) TDS ANG (TDS→CB)

This is an analog signal which corresponds to toner density.

b. Output signals

(1) TDS CONT (CB→TDS)

This signal is an analog voltage for reference used to control the TDS.

(2) M5 CONT (CB→M5)

This control signal is used to drive M5.

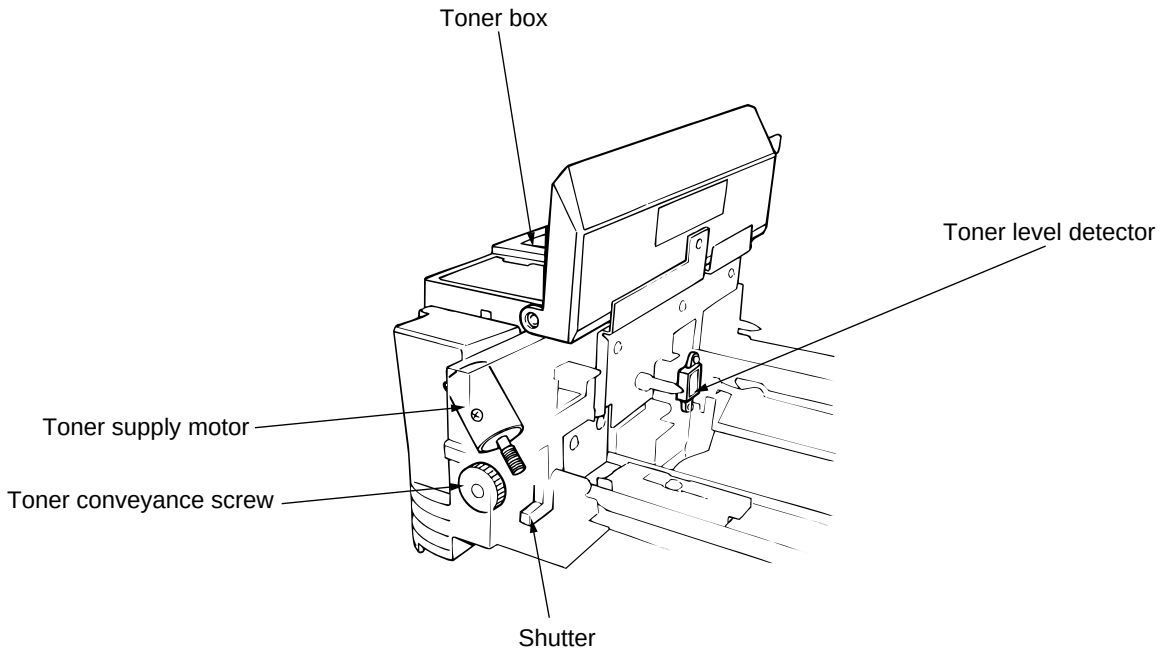
When turning M5 ON, the toner is supplied.

[L] : M5 ON

[H] : M5 OFF

TONER SUPPLY UNIT

[1] Construction



[2] Mechanism

	Mechanism	Method
*1	Toner supply	Screw conveyance system
	Toner level detection	Piezo element: approx.60g
	Toner agitation	Main agitator plate
	Toner supply amount	280g
*2	Toner leakage prevention	Toner supply shutter
	Toner supply control	DC brush motor

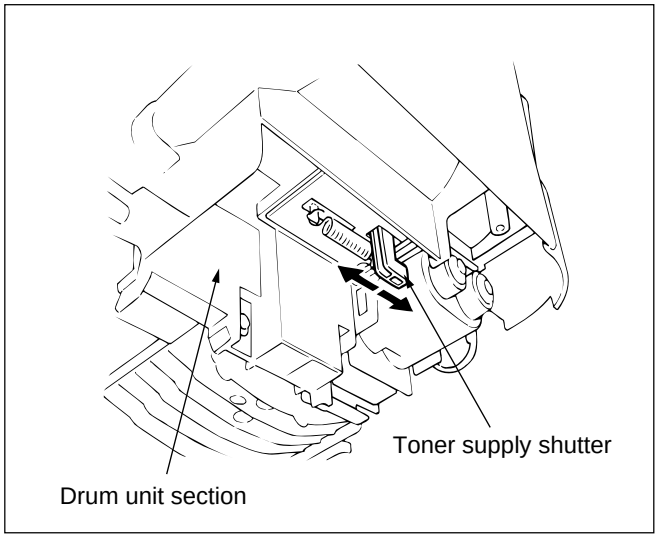
***1: Toner supply**

The toner supply motor turns the toner conveyance screw and toner agitating shaft via gears. Simultaneously, the agitation plate, attached to the toner agitating shaft, supplies the mixed toner to the developing unit.

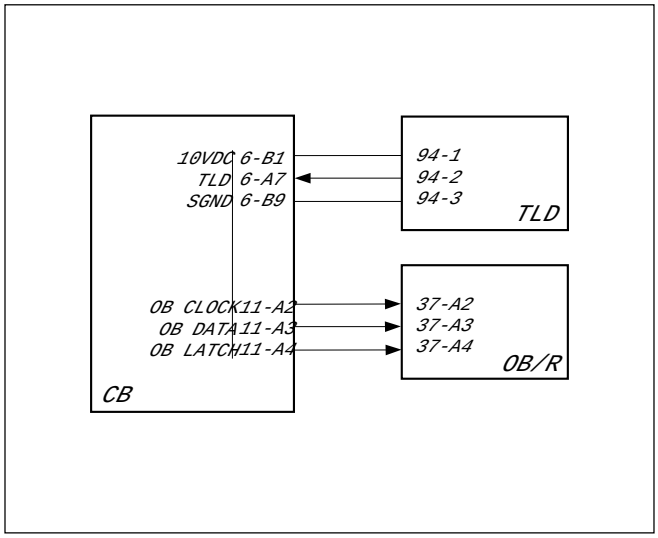
Note: Toner conveyance screw rotates counterclockwise when viewed from the fixing unit.

***2: Toner supply shutter**

The shutter of the toner supply unit is designed to close over its opening when the developing unit is removed. When the unit is installed on the drum unit, the shutter opens and allows toner to be supplied to the developing unit.



[3] Toner Level Detection Control



Toner level detection control is performed by the TLD (toner level detection) and CB (control board).

1. Operation

a. Toner level detection

A piezo device is used as the TLD.
When the level of the toner in the toner box becomes low (less than approx. 60g), the toner supply signal is output to the CB. Consequently, the toner supply LED on the OB (operation board) is lit.

b. Detection timing

The toner level is detected continuously while SW1(main switch) is ON.

2. Signals

a. Input signal

(1) TLD (TLD→CB)

This pulse signal is used to detect the level of the toner in the toner box.
[L] : Low toner level
[H] : High toner level

b. Output signals

(1) OB CLOCK (CB→OB)

This signal is used to read LED DATA (OB DATA signal) to the IC on the OB. The data are read in synchronism with this signal.

(2) OB DATA (CB→OB)

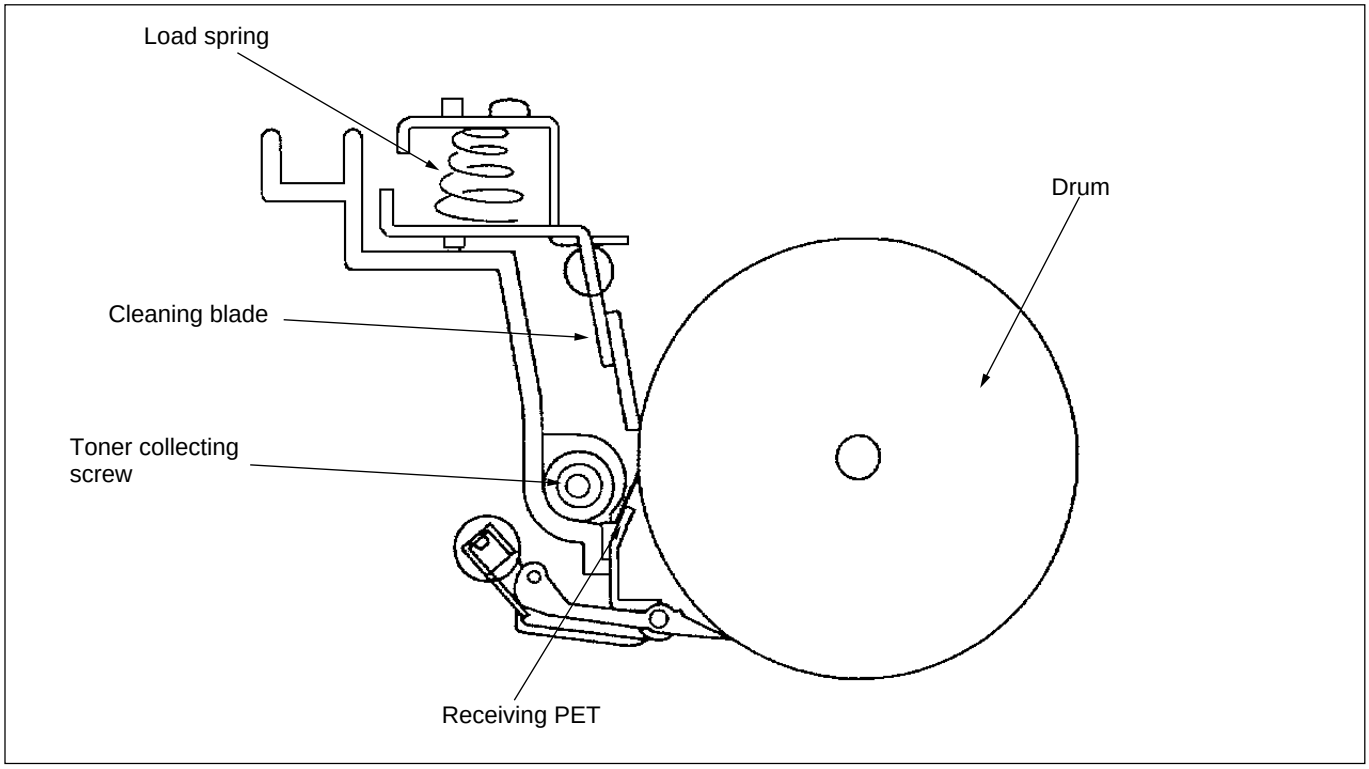
This control signal is used to turn the LED ON or OFF.

(3) OB LATCH (CB→OB)

This signal is used to latch OB DATA to the shift register on the OB. When this signal becomes [L], the data read in the register is displayed on the LED.

CLEANING UNIT/TONER COLLECTING UNIT

[1] Construction



[2] Mechanism

Mechanism	Method
Drum cleaning	Cleaning blade (Spring pressured)
Toner collection process	Screw conveyance system leading to toner collection box (Toner recycle)
Toner secondary collection	Receiving PET

[3] Disassembly and Assembly

1. Removing/reinstalling the cleaning blade

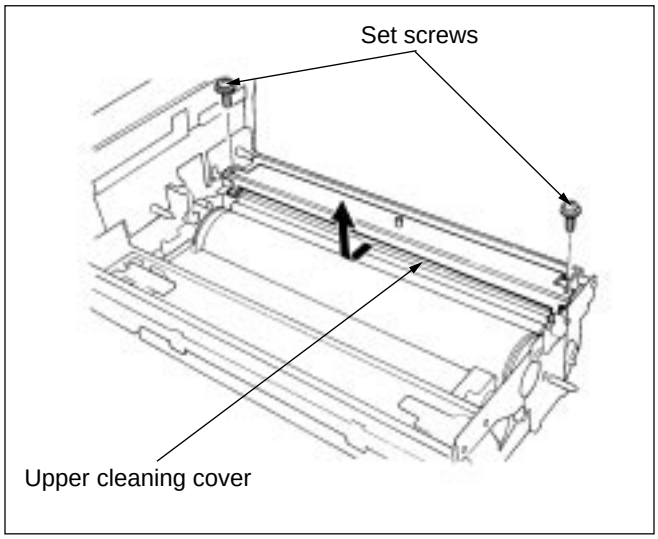
Cautions:

1. When removing the cleaning blade, do not touch its blade with bare hands in any way.
2. Take care not to scratch the drum.
3. When the drum is outside of the drum unit, always cover it with a drum cover and store in a dark place.
4. Before installing the cleaning blade, apply setting powder to the edges. (Slide it on the drum surface to install it.)
5. After the cleaning blade has been reinstalled, verify that both edges of the blade are contacted with the drum surface. If not, toner leakage may occur.
   Refer to “removing/reinstalling the drum” for the verifying direction.

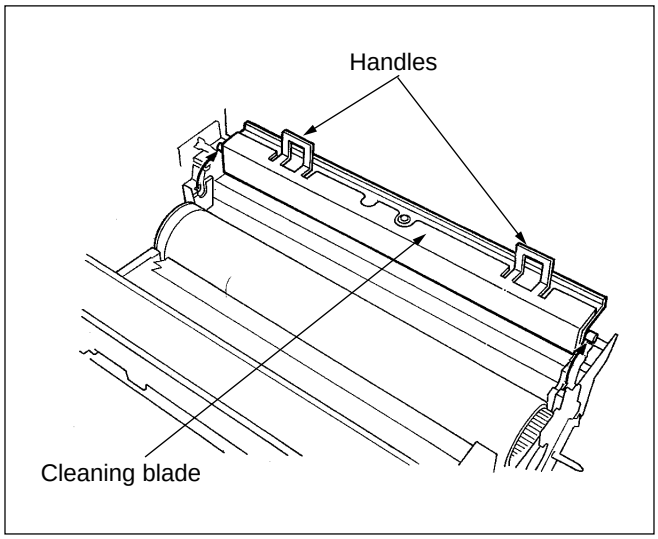
a. Procedure

(1) Open the upper main body, then remove the drum unit. (Refer to drum unit section for removal instructions.)
(2) Remove the charging cleaning knob for the charging corona unit from the drum unit.
(3) Disconnect CN92 and CN96 for PCL and CEL.

(4) Remove the 2 set screws, then remove the charging corona unit.
(5) Remove the 2 set screws, then remove the upper cleaning cover.



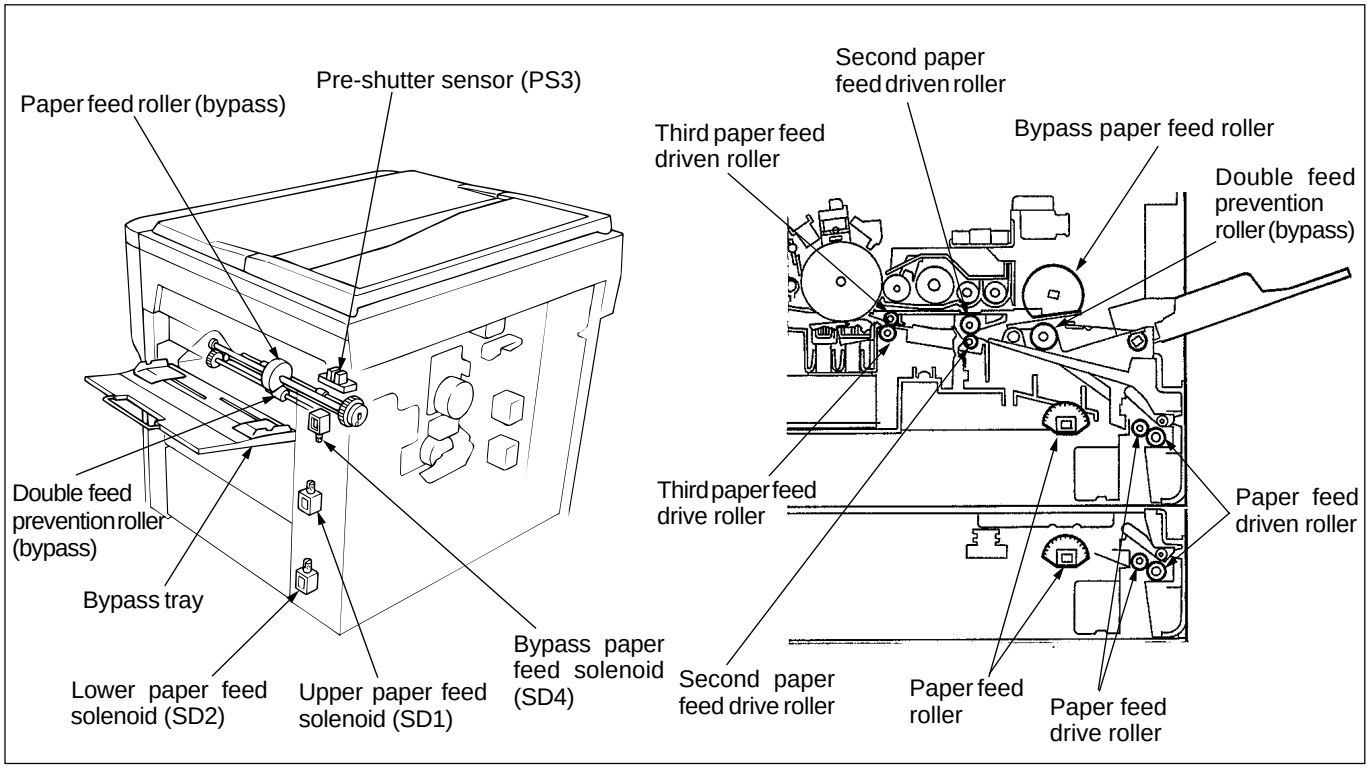
(6) Remove the cleaning blade by lifting the handles.



(7) Reinstall the removed parts by reversing the procedure described above.

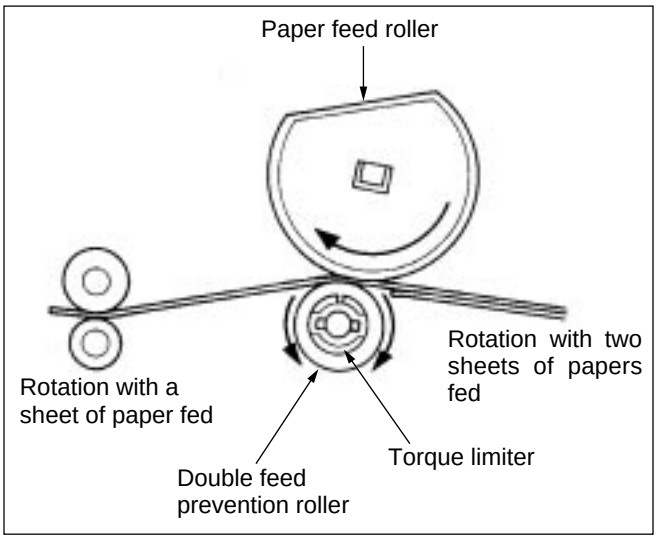
PAPER FEED SECTION

[1] Construction



[2] Mechanism

	Mechanism	Method
	Paper stacker	Tray (2 stages), Multi bypass feed unit
	Bypass feed	Multi bypass feed
*1	Double feed prevention	Bypass feed section: Torque limiter Tray section : claw
	Tray loading	Front loading system
	Paper feed from cassette module	Feed roller, Paper feed solenoid
	2nd paper feed	Feed roller, Resistant plate, Resistant solenoid
*2	Multi bypass feed	Feed roller, Bypass feed solenoid
	Paper size detection	Tray sensing switch



*1: **Torque limiter**

When using the bypass feed unit, clockwise rotation of the paper feed roller sends a paper to the 2nd paper feed roller. Simultaneously, the double feed prevention roller and torque limiter engaged with it are rotated counterclockwise. If two sheets of papers are sent, the return spring of the torque limiter allows the torque limiter to automatically rotate clockwise. This action also turns the double feed prevention roller clockwise, causing any sheets that are in direct contact with the prevention roller to be pushed back to the bypass feed unit.

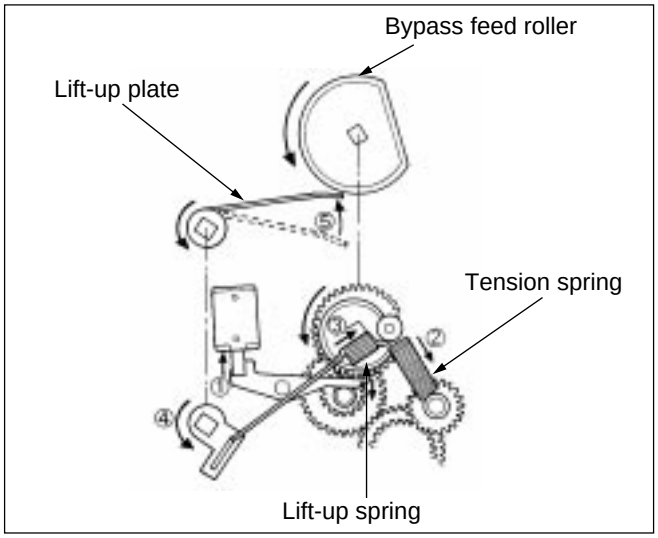
***2: Bypass feed**

One solenoid (SD4) and two tension springs provide the bypass feed as follows:

(1) When the bypass feed solenoid (SD4) is turned ON, the control lever releases the gear for the bypass feed roller. Then the tension spring pulls the gear downward so that the gear can be engaged with the idle gear to rotate.

(2) This action pulls the lift-up spring connected to the gear above so that the bypass lift-up plate can rise.

(3) Finally, a paper set on the lift-up plate touches the bypass feed roller, and it is inserted into the machine.



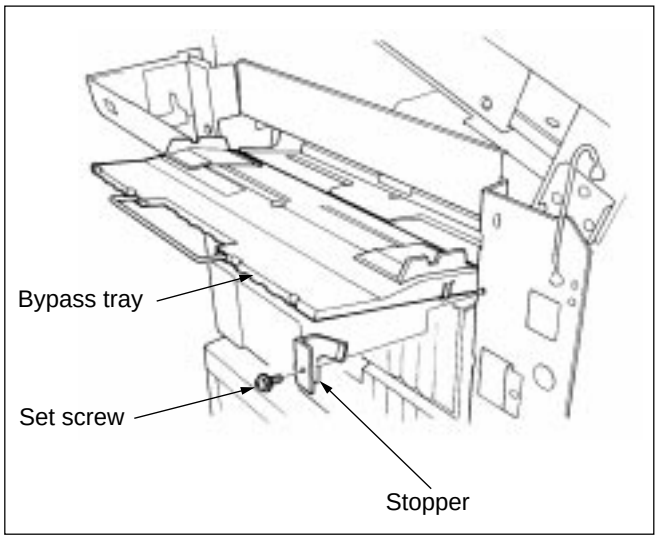
[3] Disassembly and Assembly

1. Removing/reinstalling the bypass tray

a. Procedure

(1) Remove the right rear cover.

(2) Remove the set screw, then remove the stopper and bypass tray.



(3) Reinstall the removed parts by reversing the procedure described above.

2. Removing/reinstalling the multi bypass feed unit

a. Procedure

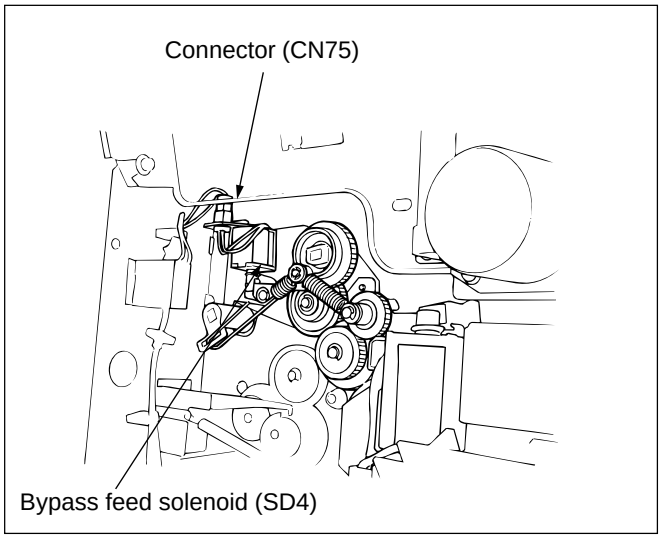
(1) Remove the rear cover and right rear cover. (Refer to the drive section for removal instructions.)

(2) Open the upper main body.

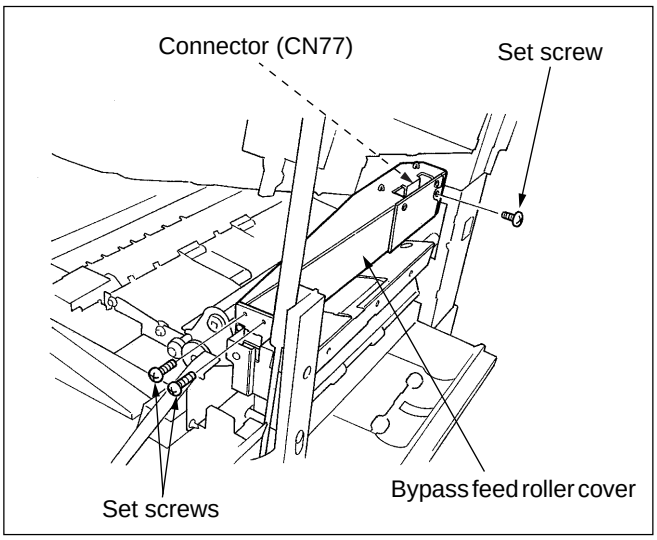
(3) Remove the CB (control board). (Refer to the drive section for removal instructions.)

(4) Remove the bypass tray.

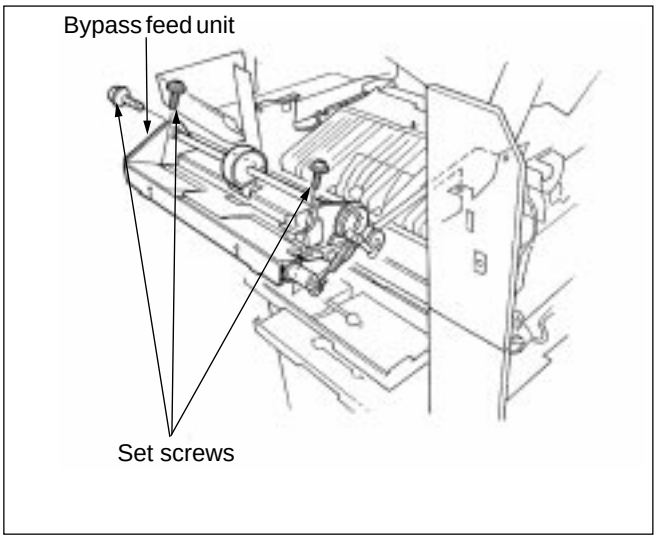
(5) Disconnect CN75 for the bypass feed solenoid (SD4).



(6) Remove the key counter connector (CN77) from wire clamping parts.
(7) Remove the 3 set screws, then remove the bypass feed roller cover toward you.



(8) Remove the 3 set screws, then remove the bypass feed unit.

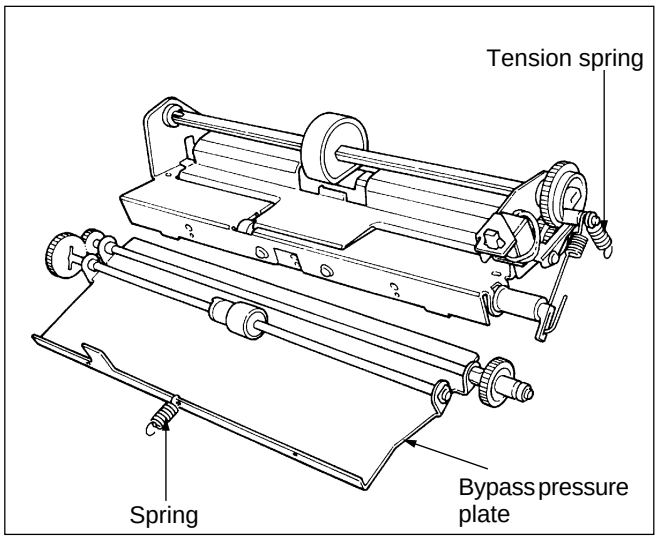


(9) Reinstall the removed parts by reversing the procedure described above.

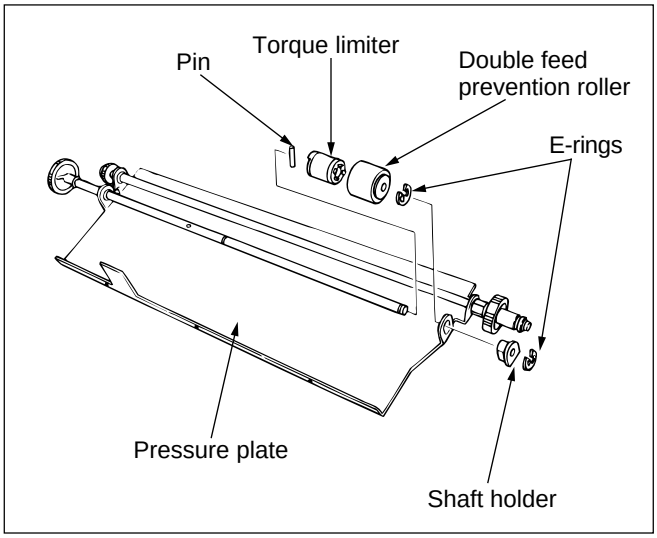
3. Removing/reinstalling the double feed prevention roller

a. Procedure

(1) Remove the multi bypass feed unit.
(2) Disconnect the lower hook of the tension spring from the shaft.
(3) Remove the spring, then remove the bypass pressure plate from the unit.



(4) Remove the 2 E-rings and shaft holder from the pressure plate, then remove the double feed prevention roller, torque limiter, and pin.



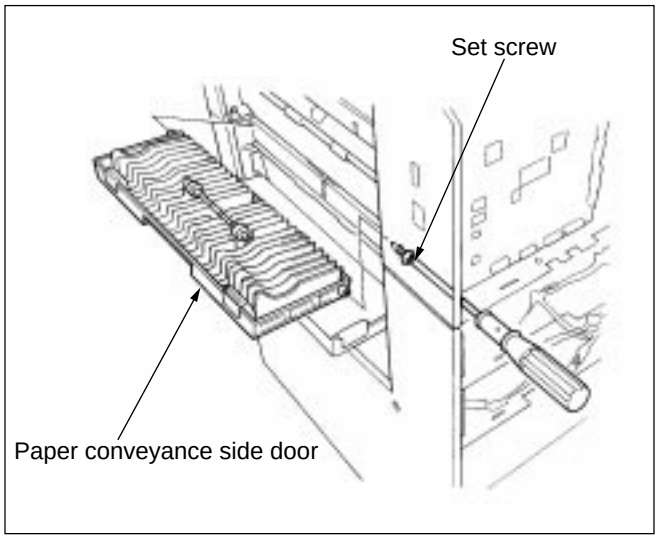
(5) Reinstall the removed parts by reversing the procedure described above.

4. Removing/reinstalling the paper feed guide sheet

a. Procedure

(1) Remove the rear cover. (Refer to the drive section for removal instructions.)

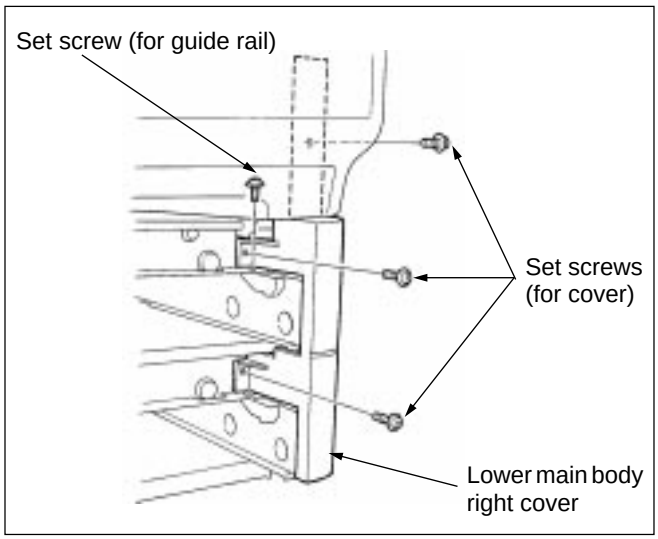
(2) Loosen the set screw, then remove the paper conveyance side door.



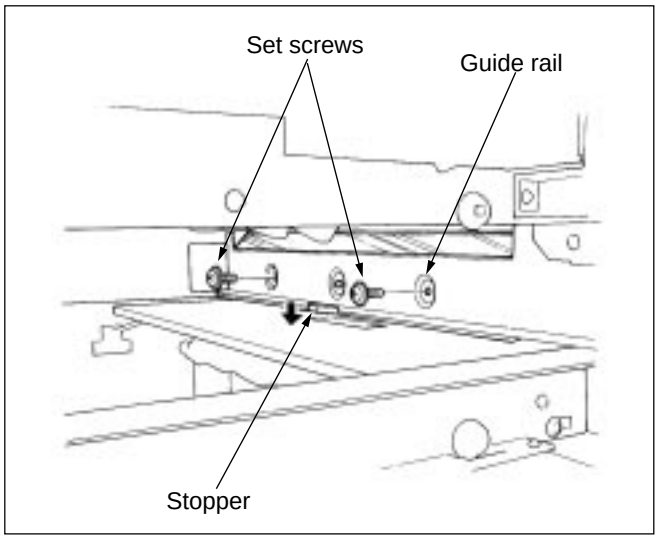
(3) Remove the tray.

(4) Open the upper main body, remove the 3 set screws, then remove the lower main body right cover.

(5) Remove the set screw for paper feed guide rail.



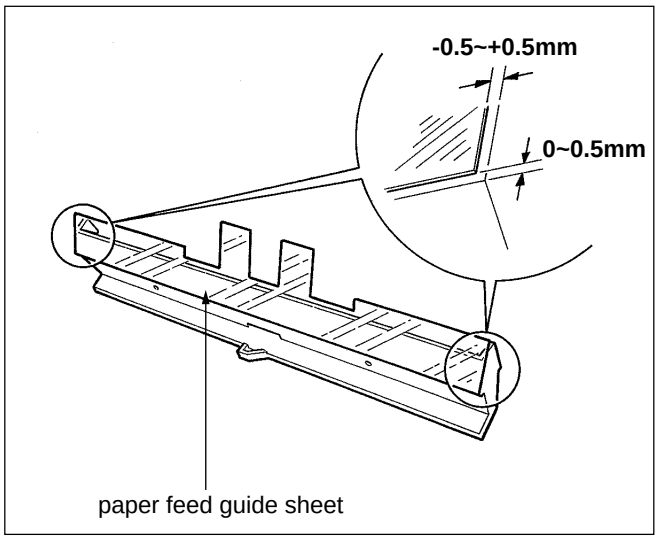
(6) Remove the 2 set screws, then remove the paper feed guide rail while pushing its stopper downward.



(7) Peel the guide sheet off the guide rail.

(8) Clean the area of the guide rail where the new guide is attached using a cleaning pad dampened with drum cleaner.

(9) Attach a new paper feed guide sheet to the rail as shown in the illustration below.



(10) Reinstall the removed parts by reversing the procedure described above.

5. Removing/reinstalling the 2nd/3rd paper feed driven roller

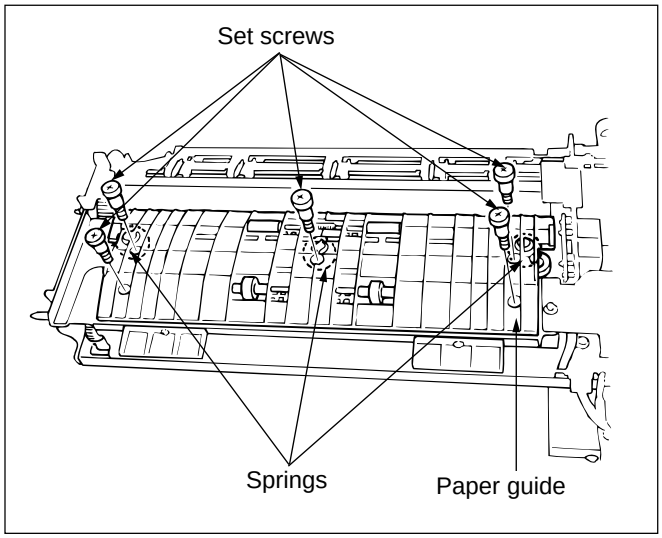
Cautions:

1. When the drum is removed from the drum unit, always cover it with a drum cover and store in a dark place.
2. When installing the drive roller, install the rubber roller to the paper feed side since the second paper feed driven roller is the rubber roller.

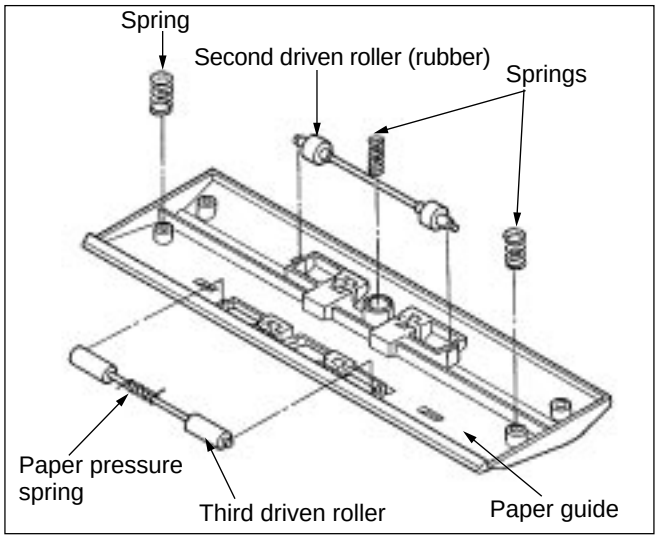
a. Procedure

(1) Open the upper main body, then remove the drum unit. (Refer to drum unit section for removal instructions.)

(2) Remove the 5 set screws, then remove the paper guide and 3 springs from the drum unit.



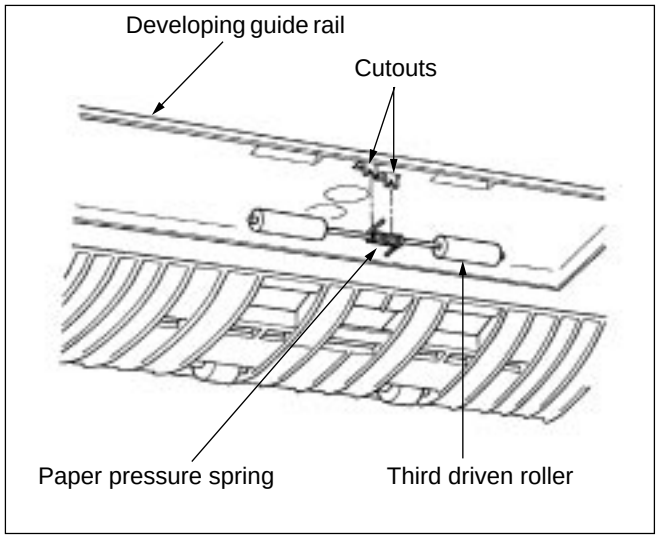
(3) Remove the second and third paper feed driven rollers from the paper guide.



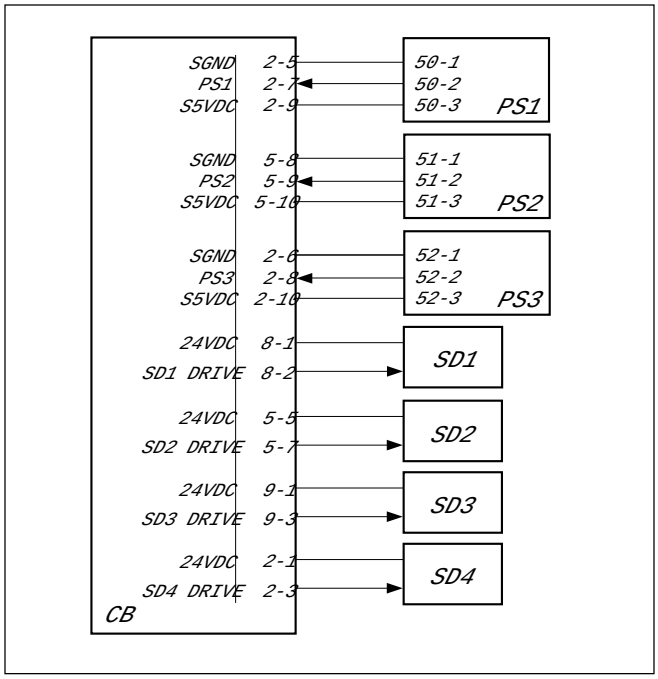
(4) Reinstall the removed parts by reversing the procedure described above, noting the following.

Notes:

1. Verify that the ends of the paper pressure spring is aligned with the cutouts of the developing guide rail under the drum unit. If not, paper jam may occur (Jam Code: J31).
2. After assembling the rollers, verify that the rollers move up and down smoothly and also spring tension is operated properly by pressing the rollers.



[4] Paper Feed Control



The paper feed operation is performed by transmitting the rotational force of M1 (main motor) to the paper feed section, using three solenoids.
The paper feed operation from the cassette is performed by SD1 (upper paper feed) or SD2 (lower paper feed), the first paper feed from the multi by-pass feed unit is performed by SD4 (multi by-pass feed), and the second paper feed is performed by SD3 (Resist).
Each operation is controlled by the CB (control board).
Related signals are PS1 (upper paper feed), or PS2 (lower paper feed) and PS3 (pre-shutter).

c. 1. Operation

a. Operation timing of paper feed from cassette

(1) ON timing
When the copy button is pressed.

(2) OFF timing
After 300 msec from when each solenoid (SD1, SD2 or SD4) is turned ON.

(3) Second try of paper feed operation
When PS1 is not turned ON within a fixed period after the paper feed operation has been completed, the paper feed operation is performed again.

Second try ON	Second try OFF
After 945 msec from when the copy button is pressed.	After 300 msec from when the SD1 or SD2 is turned ON.

* When the bypass feed operation is selected, the second try is not performed.

b. Second paper feed operation timing

(1) ON timing
After 286 msec from when starting exposure scanning.

(2) OFF timing
After the specified time from when PS3 is turned OFF.

2. Signals

a. Input signals

(1) PS1 (PS1 → CB), PS2 (PS2 → CB)
This signal indicates the state of PS1 or PS2.
This is ON when paper is at the conveyance door, and it outputs [H].

(2) PS3 (PS3 → CB)
This timing signal is used to operate the resist shutter.
The sensor is ON when paper engages PS3.
[L]: Paper is not engaging PS3.
[H]: Paper is engaging PS3.

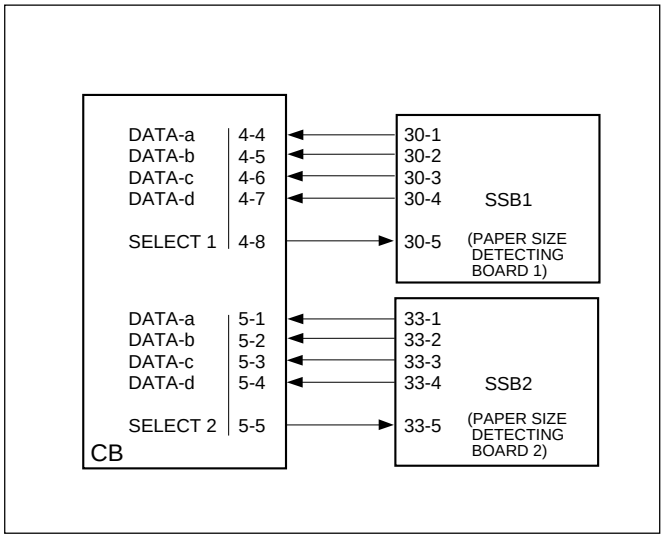
b. Output signals

(1) SD1 DRIVE (CB → SD1), SD2 DRIVE (CB → SD2)
This control signal is used to drive SD1 or SD2 so that the 1st paper feed operation from the cassette can be started or stopped.
[L]: SD1 ON or SD2 ON
[H]: SD1 OFF or SD2 OFF

(2) SD3 DRIVE (CB → SD3)
This control signal is used to drive SD3 so that the shutter can raised or lowered.
[L]: SD3 ON. The shutter is lowered to send paper to the 3rd paper feed section.
[H]: SD3 OFF. The shutter is raised to stop paper conveyance.

(3) SD4 DRIVE (CB → SD4)
This control signal is used to drive SD4 so that the 1st paper feed from the multi by-pass feed unit can be started or stopped.
[L]: SD4 ON
[H]: SD4 OFF

[5] Paper Size Detection Control



Detection of the size of paper in the tray is performed as a result of signals from the paper size detection board being input to the matrix circuit of the CB (control board).

1. Operation

The paper size detection board detects the position of the trail edge guide in the tray by means of four switches. The particular combination of the ON or OFF state of each of these switches enables the board to detect the paper size. The relation ship between the ON/OFF state of the switches on the paper size detection board and the paper size is shown below.

Paper size	Switch			
	A	B	C	D
A3	○	×	○	○
A4	○	×	×	○
A4R	○	×	○	×
B4	○	○	○	○
B5	○	○	×	○
B5R	○	○	○	×
A5R	×	○	×	○
F4 (8 × 13)	×	○	○	×
Universal	○	×	×	×

○ : ON
× : OFF

2. Signals

a. Input signal

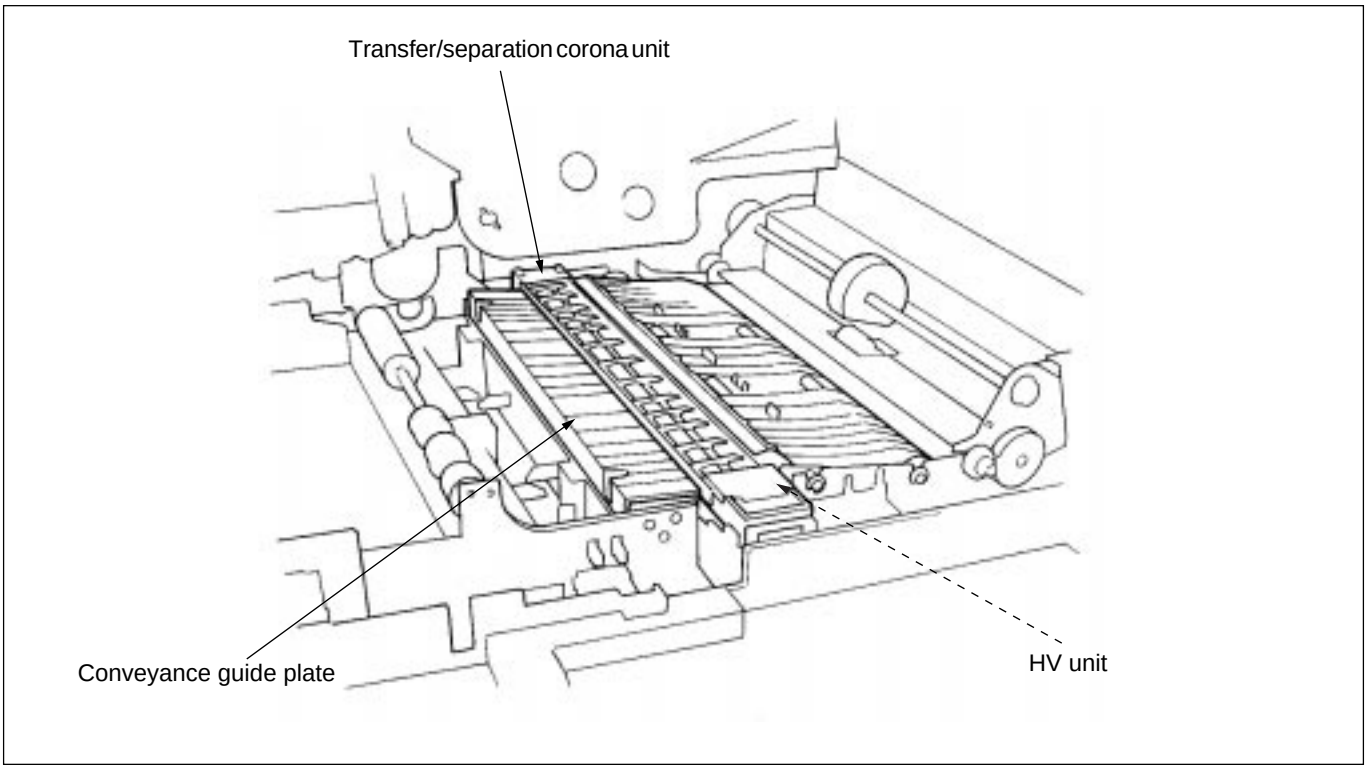
(1) DATA - a to d
(Paper size detection board → CB)
These signals are used to turn the paper size detection switches ON or OFF.

b. Output signal

(1) SELECT 1 or SELECT 2
(CB → Paper size detection board)
This is the paper size detection timing pulse.

PAPER CONVEYANCE SECTION

[1] Construction



[2] Mechanism

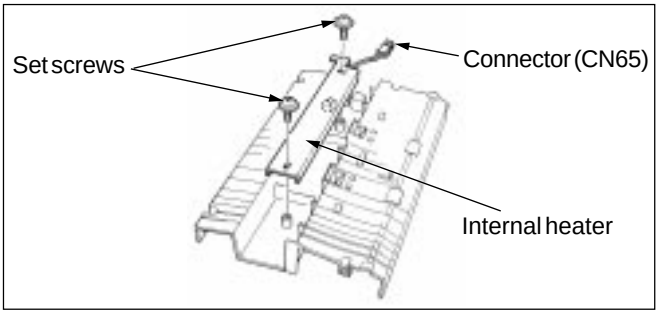
Mechanism	Method
Paper conveyance	Beltless
Internal dehumidification	Internal heater(Option)

[3] Disassembly and Assembly

1. Removing/reinstalling the internal heater

a. Procedure

(1) Open the front door, then pull up the main body separating lever to open the upper body.
(2) Remove the transfer/separation corona unit. (Refer to each individual section for removal instructions.)
(3) Disconnect CN65 for the internal heater.
(4) Remove the 2 set screws, then remove the internal heater from the conveyance guide plate.



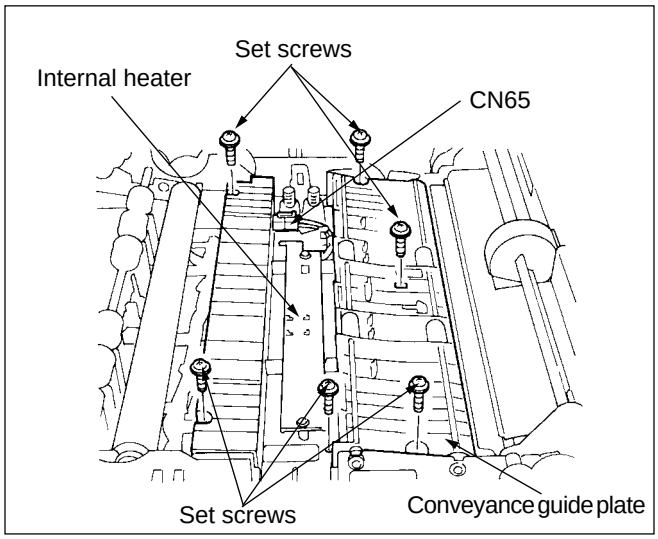
(5) Reinstall the removed parts by reversing the procedure described above.

Note: When installing or removing the internal heater, never fail to confirm or change the set value for "judging existence of internal heater". (Refer to Item of 25 mode in Adjustment Section for details.)

2. Removing/reinstalling the paper conveyance guide plate

a. Procedure

(1) Open the front door, then remove the transfer/separation corona units. (Refer to individual section for removal instructions.)
(2) Remove the drum unit and fixing unit. (Refer to each individual section for removal instructions.)
(3) Disconnect CN65, the connector for the internal heater.
(4) Disconnect the connector (female side) for the internal heater locked on the conveyance guide plate.
(5) Remove the 6 set screws, then remove the conveyance guide plate upward.



(6) Reinstall the removed parts by reversing the procedure described above.

3. Removing/reinstalling the HV unit

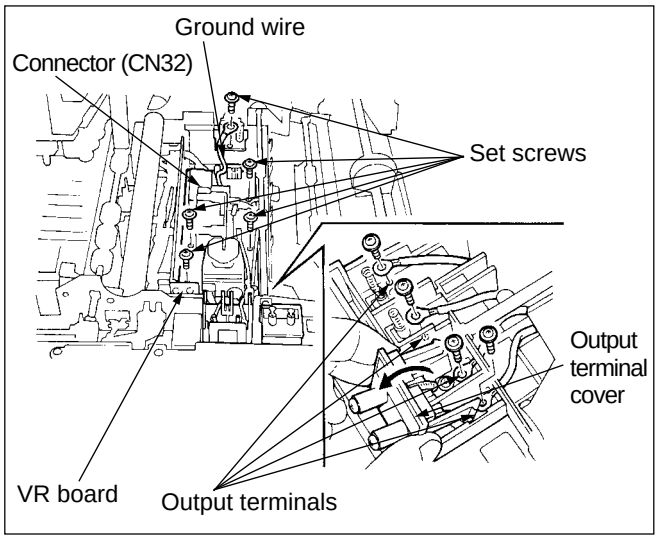
⚠ Caution: Mark all wires to restore-connect properly when reinstallation.

a. Procedure

(1) Open the front door, then remove the transfer/separation corona unit. (Refer to individual section for removal instructions.)
(2) Remove the internal heater.
(3) Remove the paper conveyance guide plate.
(4) Unhook the output terminal cover of the drum unit in 2 places.
(5) Remove the 4 screws, then remove the output terminals of the HV unit for developing bias, charging, transfer, and separation.

Note: Mark each position of the output terminals to prevent misconnection when reinstalling them.

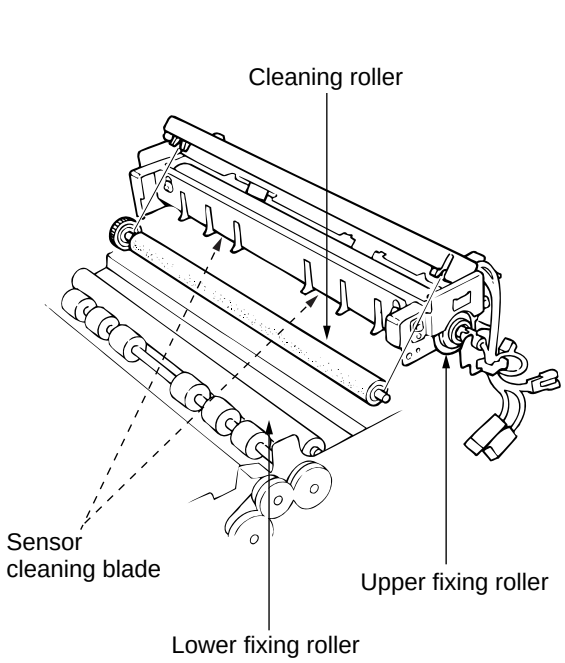
(6) Remove the VR board from the lower main body.
(7) Remove the set screw, then disconnect the ground wire.
(8) Disconnect CN32 from the HV unit.
(9) Remove the 3 set screws, then remove the HV unit.

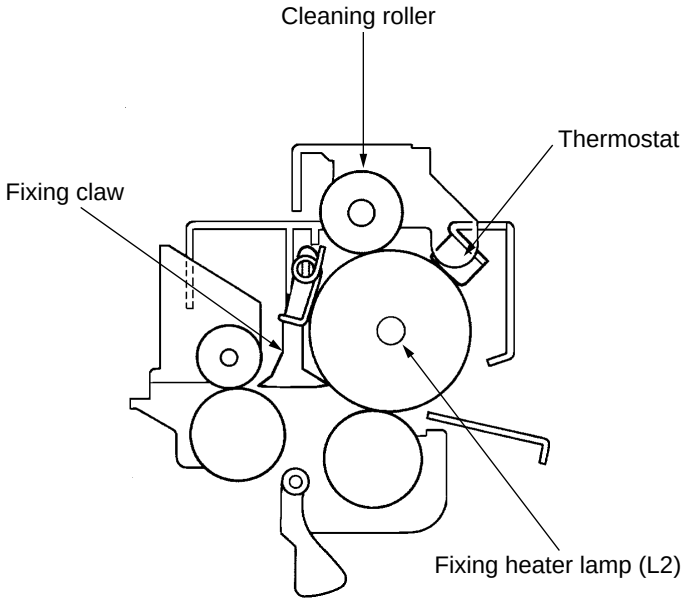


(10) Reinstall the removed parts by reversing the procedure described above.

FIXING UNIT

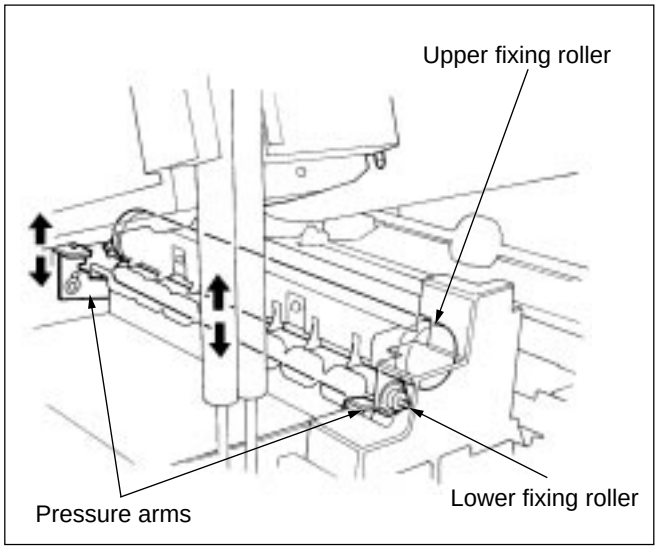
[1] Construction





[2] Mechanism

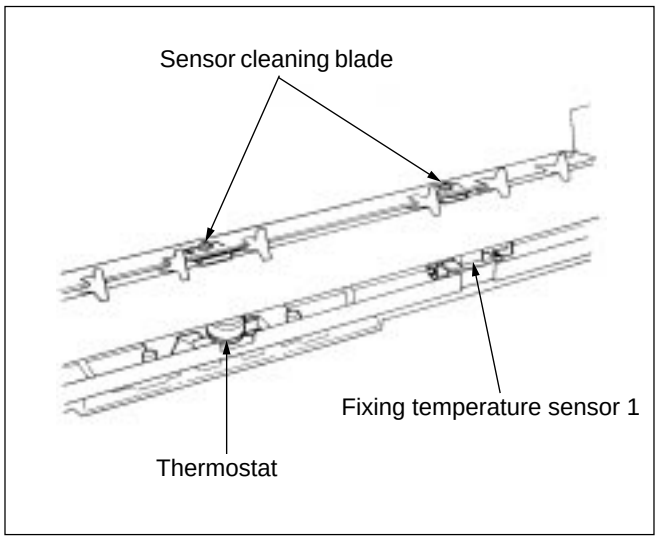
	Mechanism	Method
	Fixing	Pressure and heat roller
	Heating element	Heater lamp
	Cleaning	Cleaning roller soaked with silicon oil
	Upper roller	AL and PTFE coating (ϕ35.5 mm)
	Lower roller	Silicon rubber and PFA tube(ϕ26 mm)
	Separation	Separation claws ($\times$5 upper)
	Temperature detection	Contact-type thermistors ($\times$2)
	Overheat protection	Contact-type thermostat
	Neutralizing	Neutralizing brush
*1	Pressure release	Pressure arm and spring
*2	Sensor cleaning	Cleaning blade



***1: Pressure release of the lower roller**

Opening the upper main body allows the pressure spring to separate from the pressure arm so that the lower fixing roller on the arm can be lowered and separated from the upper roller.

*2: **Sensor cleaning blade**
Fixing temperature sensor 1 and the thermostat are cleaned by the sensor cleaning blades located on the opposite side of the upper fixing roller. They clean the upper roller indirectly to prevent any dirt from stacking on the sensors.



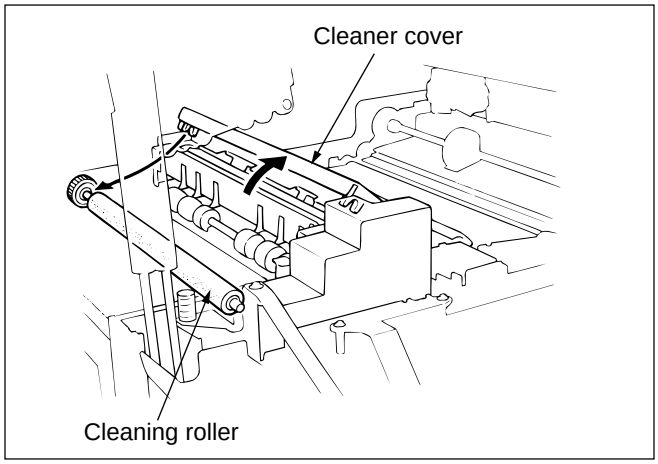
[3] Disassembly and Assembly

1. Removing/reinstalling the cleaning roller

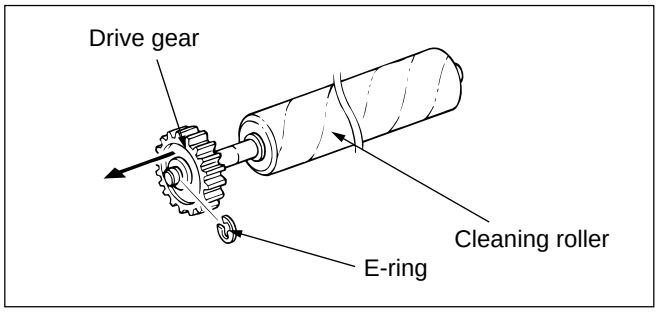
Caution: When installing the cleaning roller, align the grooves of the cleaner cover with the roller shaft.

a. Procedure

(1) Open the front door, then pull up the main body separating lever to open the upper body.
(2) Open the cleaner cover of the fixing unit, then remove the cleaning roller.



(3) Remove the E-ring, then remove the drive gear from the cleaning roller.



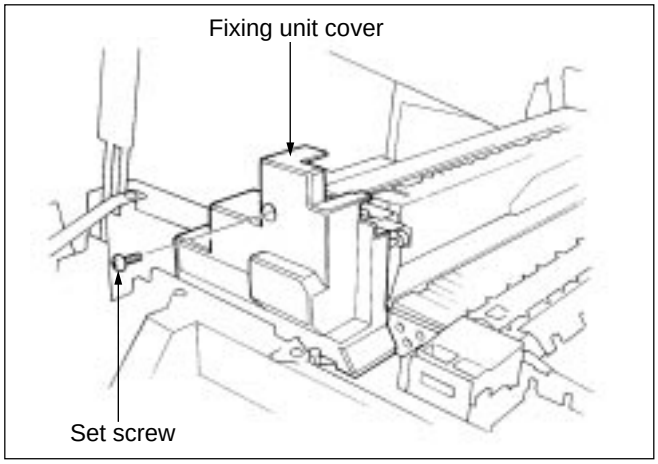
(4) Reinstall the removed parts by reversing the procedure described above.

2. Removing/reinstalling the fixing unit

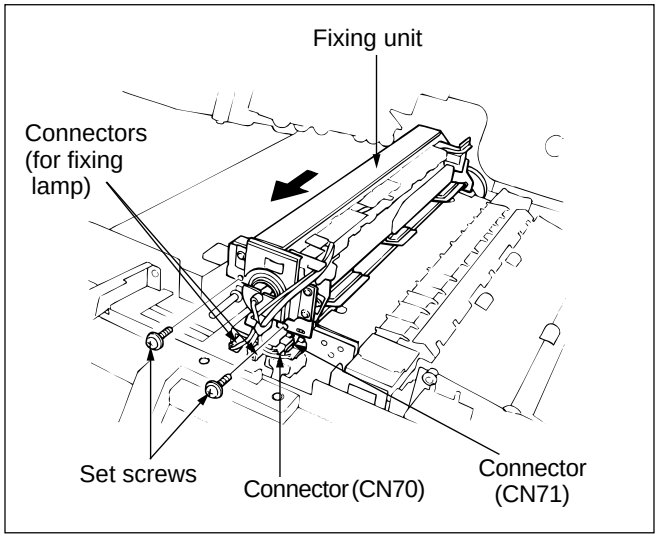
⚠ Caution: When working on the fixing unit, never fail to work when the fixing unit is cool enough, or work wearing gloves. (Hands may get burnt.)

a. Procedure

(1) Open the upper body and remove the drum unit.
(2) Remove the set screw, then remove the fixing unit cover.



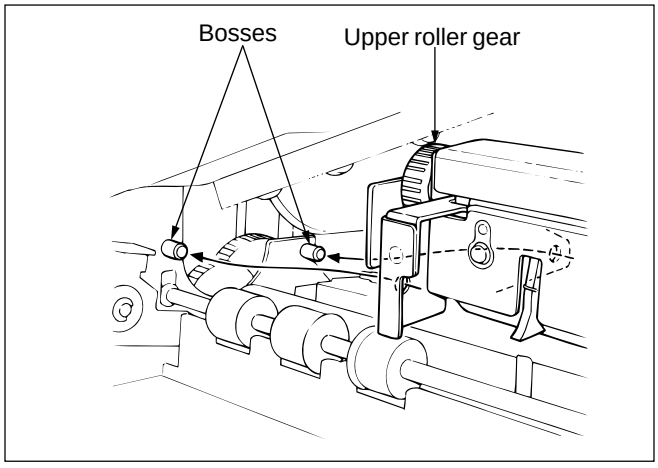
(3) Disconnect CN70 and CN71 for the fixing temperature sensors.
(4) Disconnect the two connectors from the PSB (power supply board).
(5) Remove the 2 set screws, then remove the fixing unit, as shown.



(6) Reinstall the removed parts by reversing the procedure described above, noting the following.

Notes:

1. Be careful not to damage the rubber section of the lower roller by the gear of the upper roller.
2. When installing the fixing unit, align the bosses of the main body with holes of the fixing unit. In that case, install the fixing unit while rotating the upper roller so that the gear for the upper roller may engage surely with the drive gear.



3. Replacing the fixing heater lamp

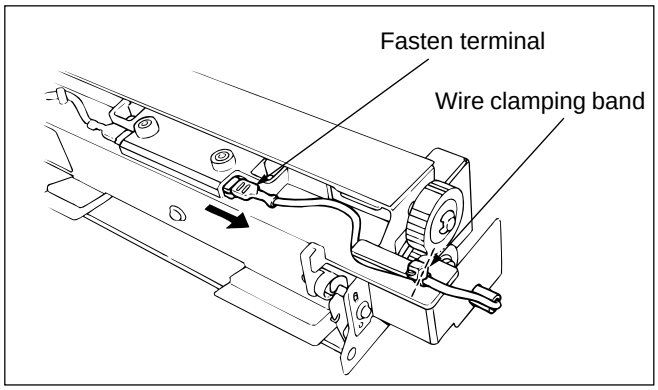
⚠ Caution: Do not touch the glass of the lamp with bare hands.

Caution:

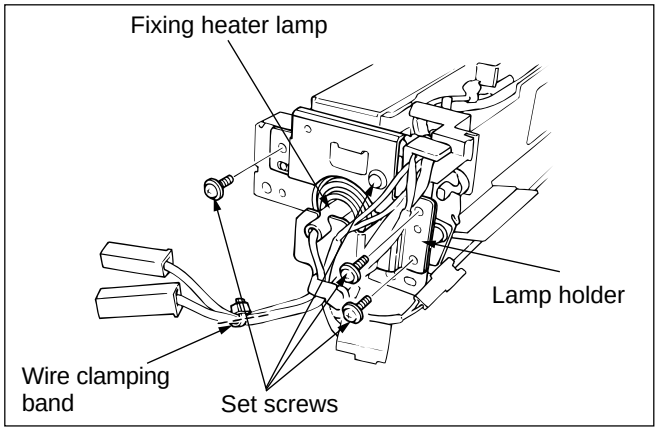
(1) When installing a lamp, ensure that the manufacturer's label on the lamp is facing the drive gear.
(2) Secure the set screws of the fixing heater lamp holder.
(3) After reinstalling the lamp, verify that it is set straightly.

a. Procedure

(1) Open the upper main body, then remove the fixing unit.
(2) Disconnect the fasten terminal of the lamp at the drive gear side and cut the wire clamping band.



(3) Remove the 4 wires from the wire clamp located at the front side of the unit and cut the wire clamping band.
(4) Remove the 4 set screws, then remove the lamp holder at the front side.
(5) Pull the fixing heater lamp toward you to remove it.



(6) Reinstall the removed parts by reversing the procedure described above.

4. Replacing the upper fixing roller

⚠ Cautions:

(1) For cautions for handling fixing heater lamp, refer to the fixing heater lamp replacement section.

(2) When using a solvent such as a roller cleaner, care should be taken for ventilation and fire.

Cautions:

(1) Be careful not to damage the roller surface with the separation claw.

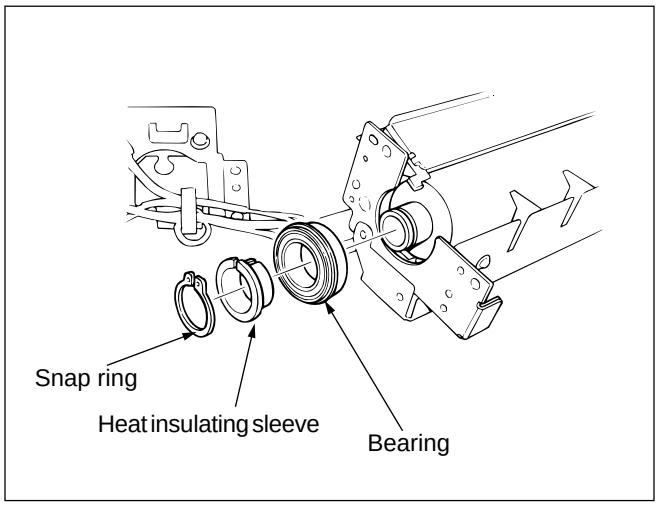
(2) Make sure that the fixing temperature sensors 1 and 2 are properly in contact with the roller surface.

a. Removing

(1) Open the upper main body, then remove the fixing unit.

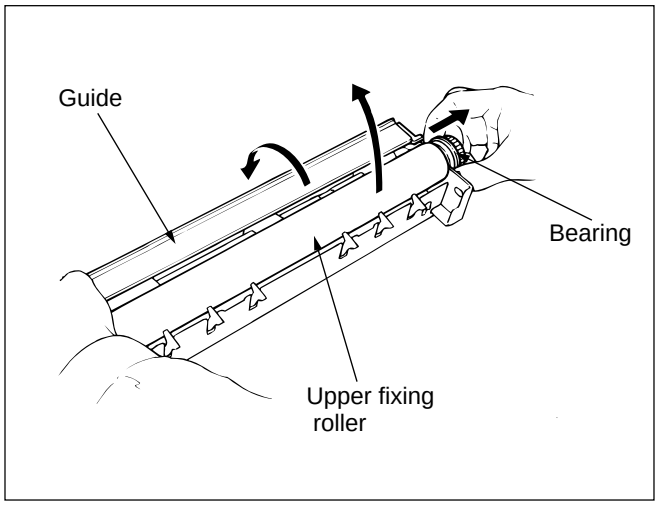
(2) Remove the fixing heater lamp.

(3) Remove the snap ring located at the front side (the side where no gear is attached), then remove the bearing and heat insulating sleeve.

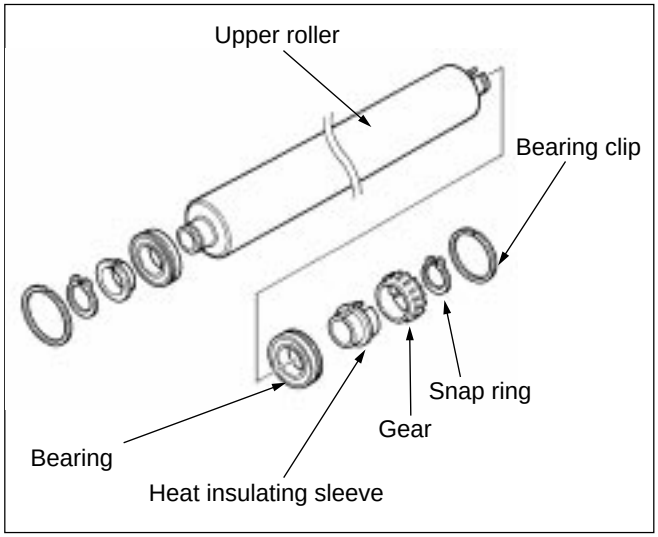


(4) Press the bearing on the roller shaft to move them to the gear side, and insert the frame portion of the unit in the clearance between the bearing and the roller.

(5) Open the guide and take out the roller upward.



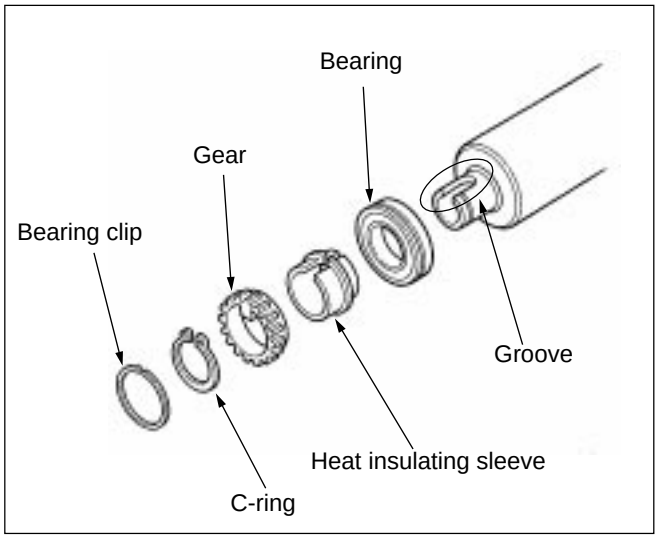
(6) Remove the snap ring, then remove the heat insulating sleeve, gear and bearing from the roller.



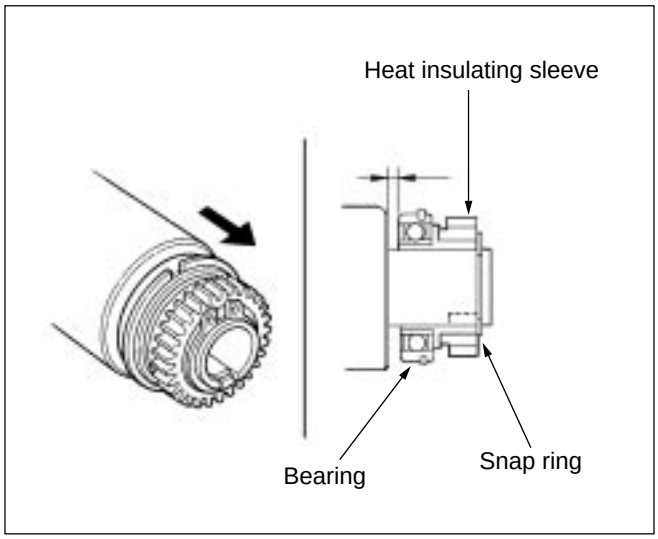
b. Installing

(1) Mount the bearing, heat insulating sleeve and gear on the roller shaft to be closer to the groove, and affix them with the C-ring. In this case, align the heat insulating sleeve with the groove on the roller shaft.

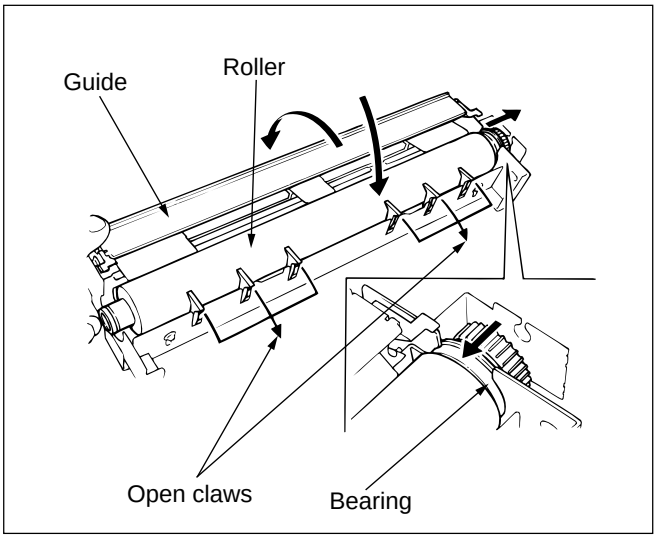
(2) Attach the bearing clip to the bearing.



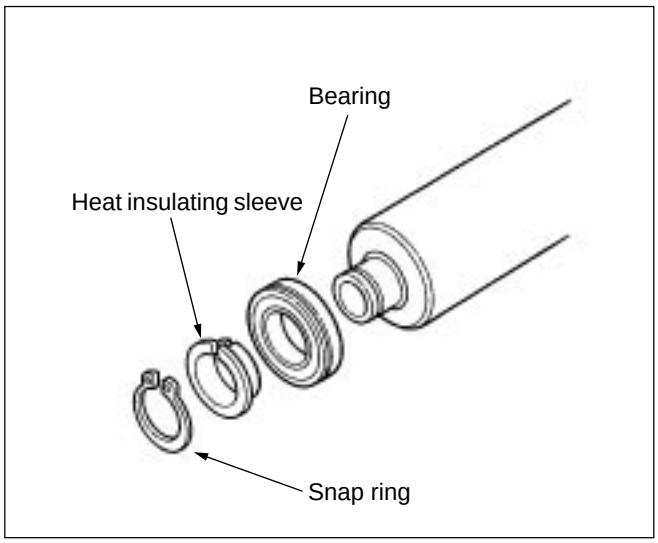
(3) Press the bearing on the gear side outward so that the heat insulating sleeve comes into contact with the Snap ring.
(4) Press the bearing located opposite to the gear outward so that the heat insulating sleeve comes into contact with the Snap ring.



(5) Press the 2 bearings on the roller shaft toward the gear side.
(6) Insert the frame portion of the unit in the clearance between the bearing on the gear side and the roller and open the six claws and guide to install the roller.



(7) Mount the bearing and the heat insulating sleeve on the front roller shaft and affix them using a Snap ring.

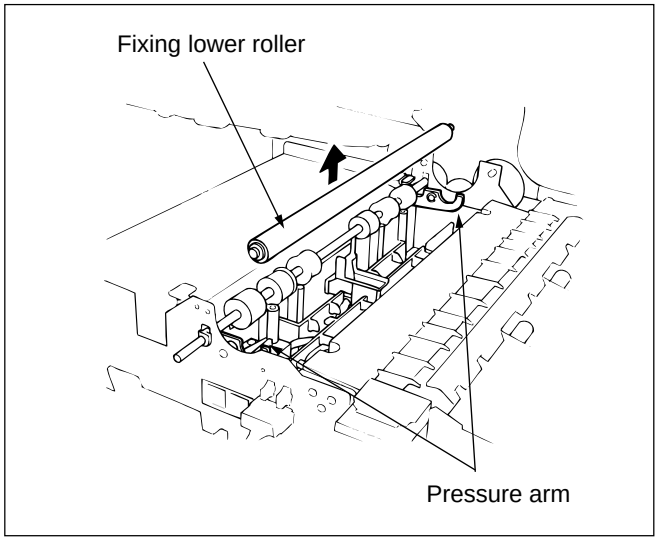


(8) Install the fixing heater lamp and the fixing unit.

5. Removing/reinstalling the fixing lower roller

a. Procedure

(1) Open the upper main body, then remove the fixing unit.
(2) Remove the fixing lower roller upward from the pressure arms.



(3) Reinstall the removed parts by reversing the procedure described above.

6. Removing/reinstalling the upper fixing cover

⚠ **Caution: When installing the upper cover, route the temperature sensor and thermostat wires properly.**

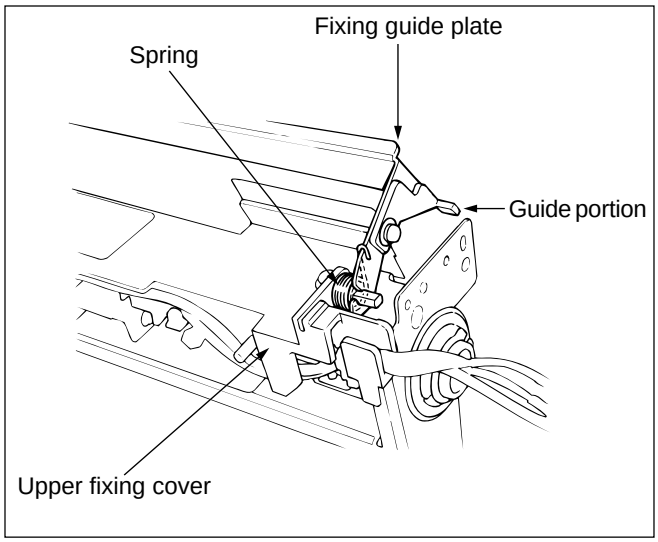
Caution:

(1) Be sure to make protrusions (2 locations) inside the upper fixing cover to engage surely with the hole on the frame of the unit.

(2) Install the fixing guide plate so that guide portions at both side may face the bearing side.

(3) Mount the spring on the fixing guide plate following the conditions below.

- L-letter side to be in the groove on the upper fixing cover.
- U-letter side to be located on the fixing guide plate.



(4) When connecting the fasten terminal to the thermostat, be sure to insert surely until they click.

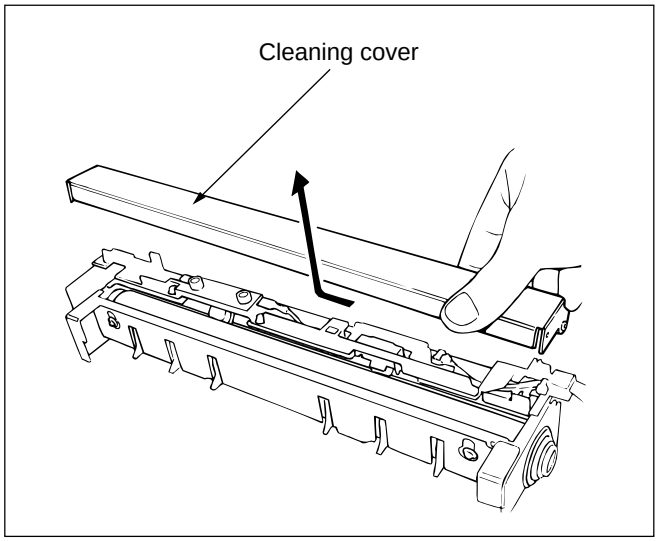
a. Procedure

(1) Open the upper main body, then remove the fixing unit.

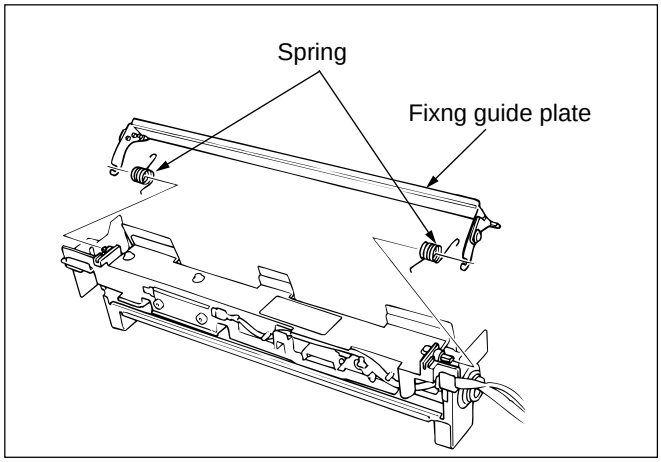
(2) Remove the cleaning roller.

(3) Remove the fixing heater lamp.

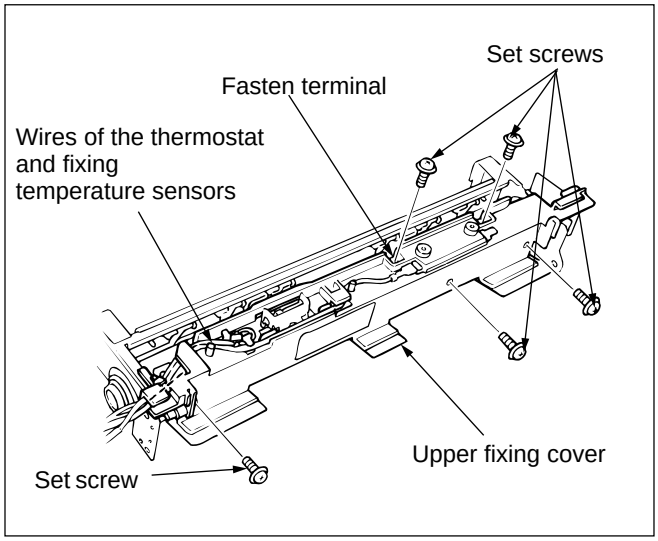
(4) Remove the 2 set screws, then remove the cleaning cover.



(5) Rotate the fixing guide plate upward and remove it with the spring.



(6) Disconnect the thermostat wire terminal (fasten).
(7) Remove the 5 set screws, then remove the upper fixing cover.
(8) Remove the wires of the thermostat and fixing temperature sensors 1 and 2 from the upper fixing cover.



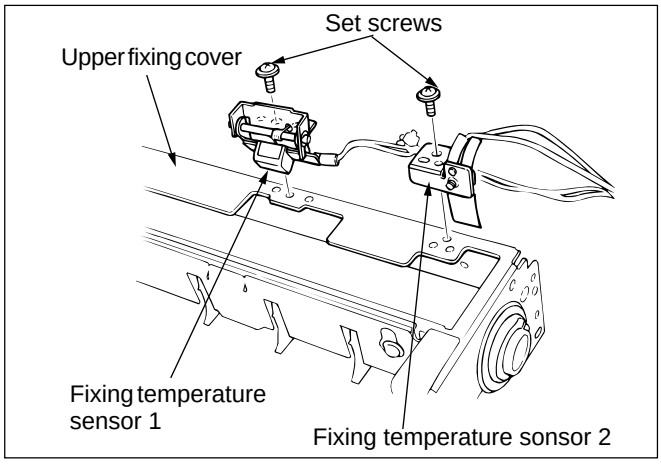
(9) Reinstall the removed parts by reversing the procedure described above.

7. Removing/reinstalling the fixing temperature sensor

Caution: Ensure that the temperature sensors touch the upper fixing roller securely.

a. Procedure

(1) Remove the upper fixing cover.
(2) Remove the 2 set screws, then remove the fixing temperature sensors 1 and 2.



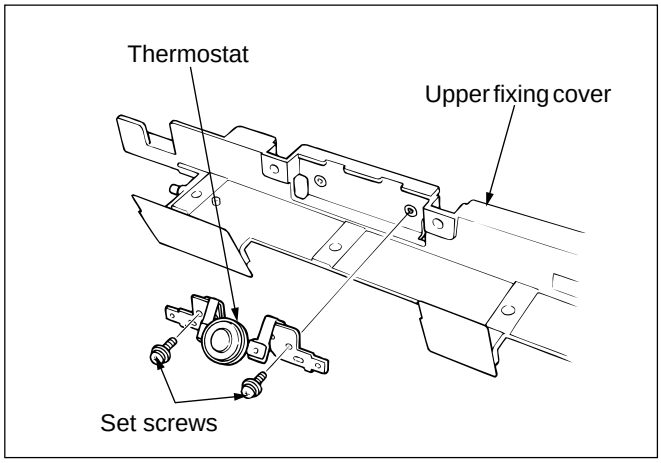
(3) Reinstall the removed parts by reversing the procedure described above.

8. Removing/reinstalling the thermostat

Caution: After installing, ensure that the thermostat is surely in contact with the upper roller.

a. Procedure

(1) Remove the upper fixing cover.
(2) Remove the 2 set screws, then remove the thermostat from the upper fixing cover.



(3) Reinstall the removed parts by reversing the procedure described above.

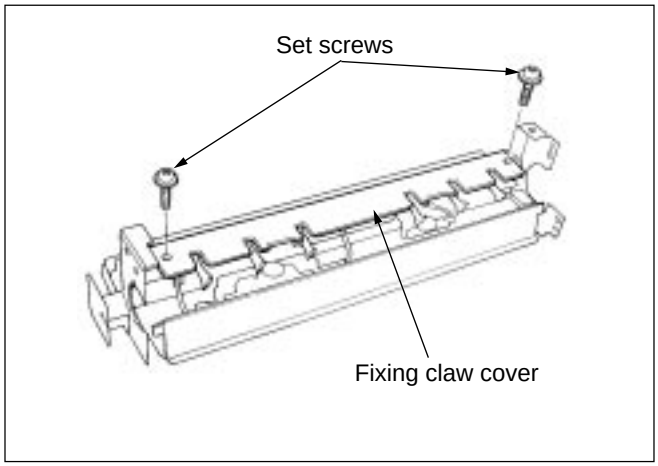
9. Replacing the fixing claws

⚠ Caution: For cautions for handling the fixing heater lamp, refer to the fixing heater lamp replacement section.

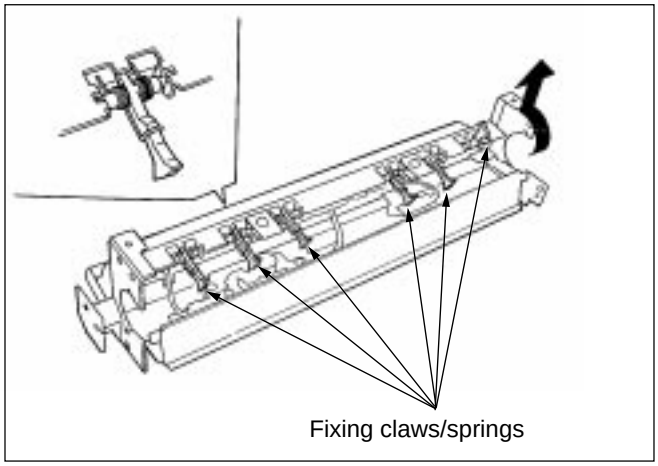
Note: When installing the fixing claw, be careful not to damage the upper roller surface.

a. Procedure

(1) Open the upper main body, then remove the fixing unit.
(2) Remove the fixing heater lamp.
(3) Remove the 2 set screws, then remove the fixing claw cover.

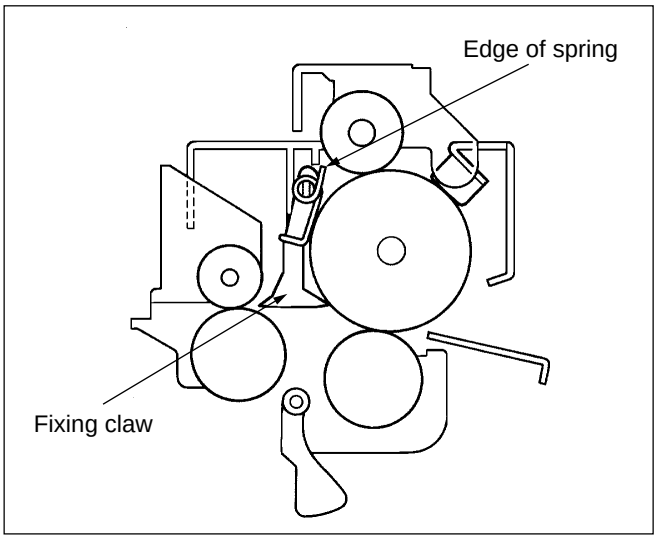


(4) Rotate the fixing claws upward to remove them.
(5) Remove the springs from the fixing claws.



(6) Reinstall the removed parts by reversing the procedure described above, noting the following.

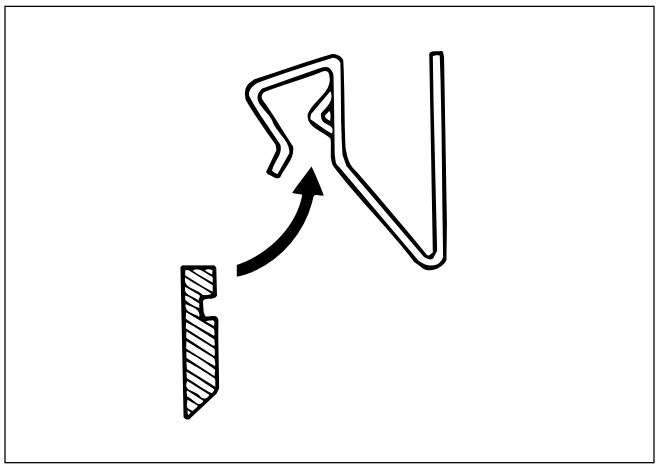
Note: When installing the claws, install the spring so that both ends are placed onto the upper frame of the fixing unit (see illustration below).



10. Replacing the sensor cleaning blade

Cautions:

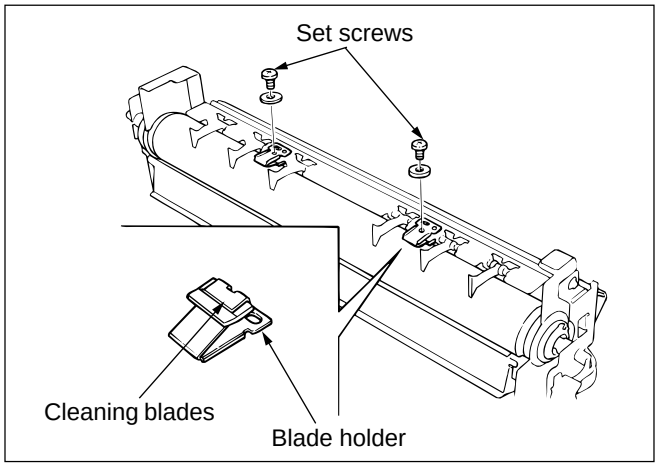
(1) When installing the sensor cleaning blades on the blade holder, align the locating boss with the hole.



(2) After installing the sensor cleaning blades, verify that they are placed in the holders properly.

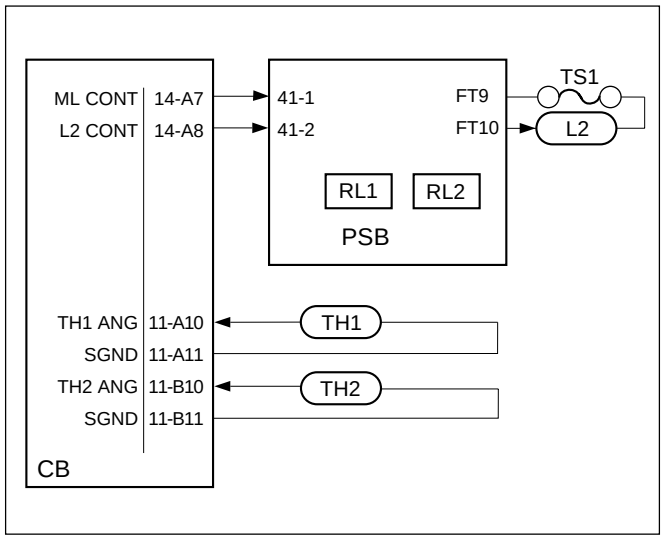
a. Procedure

(1) Open the upper main body, then remove the fixing unit.
(2) Remove the 2 set screws, then remove the fixing claw cover.
(3) Remove the 2 set screws, then remove the blade holders.
(4) Remove the sensor cleaning blades from the blade holders.



(5) Reinstall the removed parts by reversing the procedure described above.

[4] Fixing Temperature Control



The upper fixing roller is heated by L2 (fixing heater). The CB (control board) detects the temperature of the upper roller by means of TH1 and TH2 (fixing temperature sensors 1 and 2) and controls L2 via the PSB (power supply board).

1. Operation

a. Temperature control

(1) Warm-Up

When SW1 (main switch) is turned ON, the CB turns the heater lamp drive circuit on the PSB ON, causing L2 to be turned ON until it reaches the specified temperature. Upon completion of the warm-up, L2 is turned ON and OFF to keep temperature constant.

Set temperature: 195°C

(2) ON/OFF control

After the set temperature is reached and a fixed period passes, the CB turns L2 OFF. Subsequently, when the fixing temperature falls to the set temperature, L2 is turned ON again.

These operations are repeated to maintain the upper fixing roller at a constant temperature.

b. Fault protection

(1) High temperature

When the TH1 output is detected to be not more than 0.50 V (not less than 230˚C) or the TH2 output is detected to be not more than 0.31 V (not less than 260˚C), power to L2 will be cut off.

(2) Low temperature

If the TH1 output is more than 1.36 V (less than 170˚C) over a fixed period, RL1 and RL2 in PSB are turned OFF and power to L2 will be cut off.

(3) Sensor

If the TH1 output is not less than 4.85 V (less than -5˚C) or not more than 0.54 V (not less than 225˚C) over a fixed period, power will be cut off.

(4) TS1 (thermostat)

If the surface temperature of the upper fixing roller rises to a certain value, TS1 will open, cutting off the power to L2.

TS1 open temperature: 210 ± 10˚C

2. Signals

a. Input signals

(1) TH1 ANG (TH1→CB)

This is the output signal from TH1.

This signal outputs a voltage value corresponding to the surface temperature of the upper fixing roller.

(2) TH2 ANG (TH2→CB)

This is the output signal from TH2.

This signal outputs a voltage value corresponding to the surface temperature of the edge of the upper fixing roller.

b. Output signals

(1) L2 CONT (CB→PSB)

This control signal is used to turn L2 ON and OFF.

[L] : L2 ON

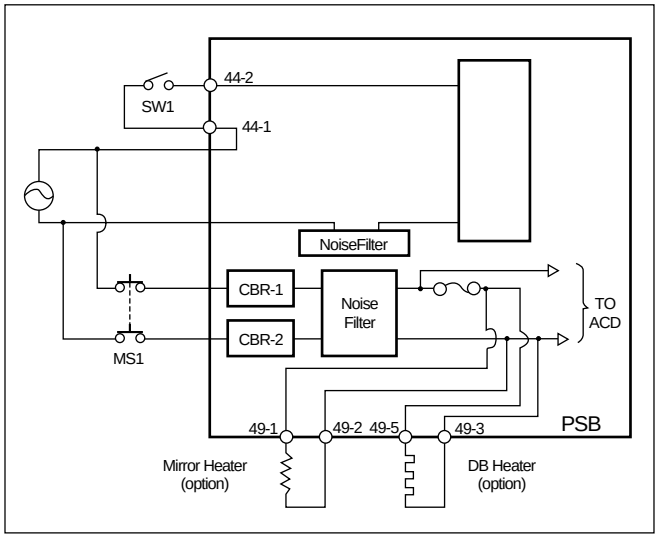
[H] : L2 OFF

(2) ML CONT (CB→PSB)

This signal is used to control RL1 and RL2 on the PSB. It becomes [H] if an abnormality occurs in the machine, turning RL1 and RL2 OFF.

OTHER CONTROL

[1] Parts that Remain ON when the Main Switch Is Turned OFF



1. Operation

The following parts remain energized so long as the machine is plugged into a power outlet, regardless of the status of SW1 (main switch) ON/OFF.

a. CBR1 and CBR2 (circuit breakers)

If a current of 15A or higher flows through the machine as a result of a short circuit in an internal component, CBR 1 and CBR2 on the PSB (power supply board) will be turned OFF, cutting off the flow of current through the machine.

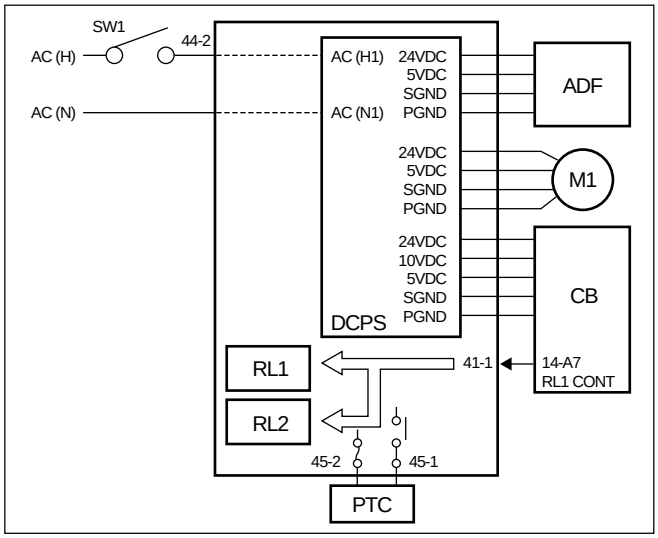
b. DB (pedestal) heater: OPTION

This heater is installed in the DB unit to prevent dew condensation in the unit.

c. Mirror heater: OPTION

This heater is installed in the optics unit to prevent dew condensation in the unit.

[2] Parts that Operate when the Main Switch Is Turned ON



1. Operation

a. Supply of power

When SW1 (main switch) is turned ON, AC power is supplied to the DCPS (DC power supply) section on the PSB (power supply board). As a result, the DCPS supplies DC power to the CB (control board), M1 (main motor), and ADF(auto draft feeder: Option). The CB starts to control the machine so that RL1 and RL2 (main relays 1 and 2) on the PSB are turned ON.

Each DC output and corresponding symbol

Output	Symbol
24VDC	
10VDC	
5VDC	
SGND	
PGND	

b. PTC (internal heater) : OPTION

The PTC is used to reduce humidity around the drum unit. It is installed under the transfer/separation corona unit.

Heater surface temperature	120±15°C
Power consumption	less than 20W

Note: When the main switch is turned ON, the PTC is turned ON.

2. Signal

a. Output signal

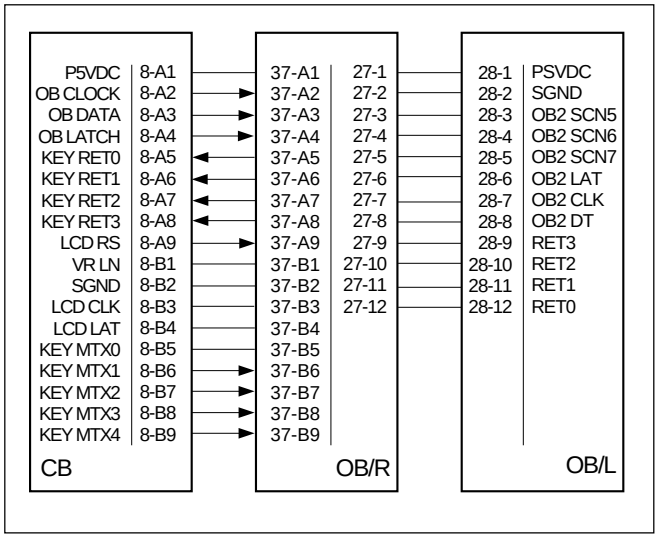
(1) RL1 CONT (CB→PSB)

This control signal is used to turn RL1 and RL2 on the PSB ON or OFF.

[L] : RL1/RL2 ON

[H] : RL1/RL2 OFF when an abnormality occurs in the machine.

[3] Operation Panel Control



The operation panel comprises the following two circuits.

- LED drive circuit
- LCD indicator circuit
- Various button input circuit

1. Operation

a. LED drive operation

Each LED is turned ON and OFF by three ICs (shift register).

Each IC turns the LED connected to each output terminal ON or OFF by means of serial data from the CB (control board).

b. LCD display operation

Various messages appear on the LCD on OBR (right operation board) as a result of LCD control signals (serial data) output from the CB.

b. Various key input operations

The operation board is separated into right and left boards. A matrix circuit is used for the key input on the operation panel.

The right operation board has four key return terminals for four timing pulses output from the CB, and outputs a total of 20 key inputs to the CB.

The left operation board has four key return terminals for three timing pulses, and outputs a total of 10 key inputs to the CB.

c. Initial operation of the operation panel

Under the following conditions, the various machine setting will be initialized.

(1) When the power is switched ON (SW1 ON)
   * The machine settings will not be initialized if SW1 is turned OFF, and then turned ON again within a specified period of time.

(2) When an auto reset operation is performed

(3) When an auto shutoff is cleared

(4) When the auto button is pressed

(5) When the key counter is inserted (only for the machine with the key counter)

d. Indication and state after the initial operation

Function	Initial state
Copy button	Green lamp (ready state)
Copy quantity	01
ADF	Blinks (refer to note 1)
AE	Lights (refer to note 2)
APS	Lights
1:1	Lights
Magnification selection	Fixed
Pre-heat	OFF (Not selected)
Special functions	OFF (Not selected)
Paper size	Indicators corresponding to all sizes of paper loaded light.
Paper feed sections	Indicators corresponding to all sections from which paper can be fed light.

Notes:

*1: Indicator blinks only for a machine with an ADF.

*2: AE mode or manual mode can be selected using 25 mode.

2. Signals

a. Input signal

(1) KEY RET 0 to 3 (OB→CB)

These are return signals from the button signal input section.

b. Outputs

(1) OB CLOCK (CB→OB)

This signal is used to read LED DATA (OB DATA signal) to the IC on the OB. The data are read in synchronism with this signal.

(2) OB DATA (CB→OB)

This control signal is used to turn the LED ON or OFF.

(3) OB LATCH (CB→OB)

This signal is used to latch OB DATA to the shift register on the OB. When this signal becomes [L], the data read in the register is displayed on the LED.

(4) KEY MTX0 TO 3 (CB→OB)

These are timing pulses to the button signal input section.

(5) LCD RS (CB→OBR)

This is the LCD ON/off control signal.

[L] : LCD ON

[H] : LCD OFF

(6) LCD DATA (CB→OBR)

This signal is LCD display data.

(7) LCD CLK (CB→OBR)

This is a clock signal which is used to read LCD DATA. Data is read in synchronism with this signal.

(8) LCD LAT (CB→OBR)

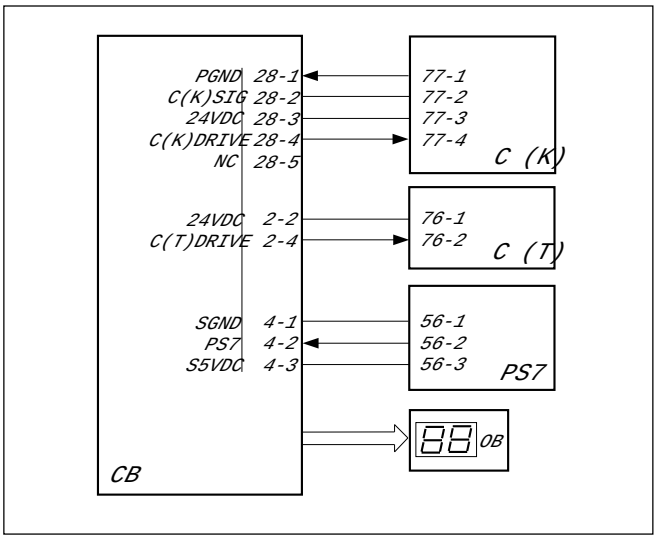
This is a deta latch signal.

When it is [L], the read data is displayed on the LCD.

(9) VR LN (CB→OBR)

This is a light quantity adjusting signal for the LCD.

[4] Counter Control



This machine contains the following counters.
• C(T) Total counter
• C(K) Key counter (Option)
These counters are controlled by the CB (control board).
PS8 (exit detection) is a signal which is related to the above control.

1. Operation

(1) Paper feed counter
The count increases by one when the 1st paper feed for the next copy starts.
(2) Paper exit counter
The count increases by one whenever PS8 is turned OFF from ON.

a. Copy quantity indicating counter on the OB (Operation Board)

During normal operation	When a jam occurs
Indicates the count value on the paper feed counter.	Indicates the count value on the paper exit counter.

b. C(K)
The count value increases in synchronism with the paper exit counter.

c. C(T)
The count value increases in synchronism with the paper exit counter.

2. Signals

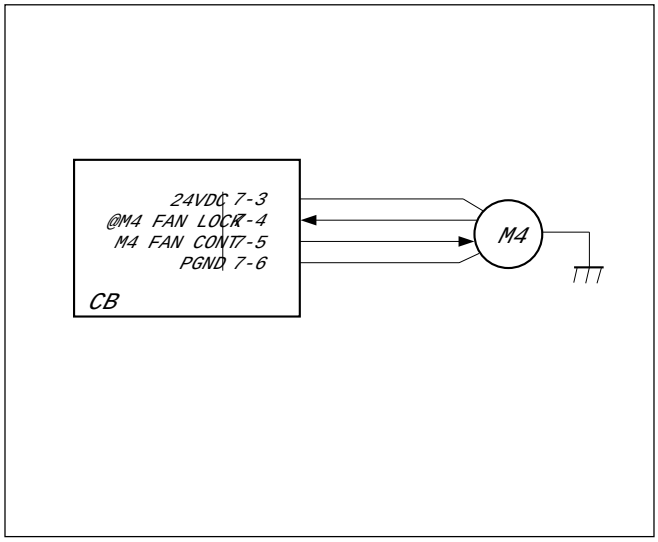
a. Input signals

(1) C(K) SIG (C(K)→CB)
This signal indicates that the count on the C(K) has increased.
(2) PS8 (PS8→CB)
This is the PS7 status signal.
[L] : PS8 ON (The paper has exited.)
[H] : PS8 OFF

b. Output signals

(1) C(K) DRIVE (CB→C(K))
This signal is used to drive the C(K)
When it changes from [L] to [H], the count on C(K) increases by 1.
(2) C(T) DRIVE (CB→C(T))
This signal is used to drive the C(T).
When it changes from [L] to [H], the count on C(T) increases by 1.

[5] Cooling Fan Control



M4 (main body cooling fan) is driven by the CB (control board).

1. Operation

M4 is a 24VDC, two speed motor that is controlled by the CB.

(1) Operation when power is ON (idle state)
M4 rotates at a high speed for approximately 2 seconds, then changes to a low speed.

(2) Operation during copy
M4 rotates at a high speed in synchronism with M1 (main motor).

(3) During idling
Inner temperature of the machine is watched so that M4 rotates at a high speed over a fixed temperature or at a low speed under it.

2. Signals

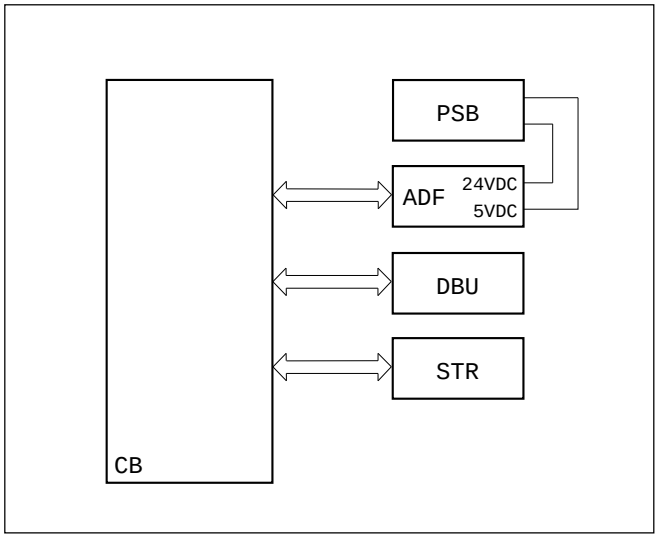
a. Input signal

(1) M4 FAN LOCK (M4→CB)
This is the abnormal rotation detection signal for M4.

b. Output signal

(1) M4 FAN CONT (CB→M4)
This signal is used to change the speed of M4.
[L] : M4 rotates at a low speed.
[H] : M4 rotates at a high speed.

[6] Option Control

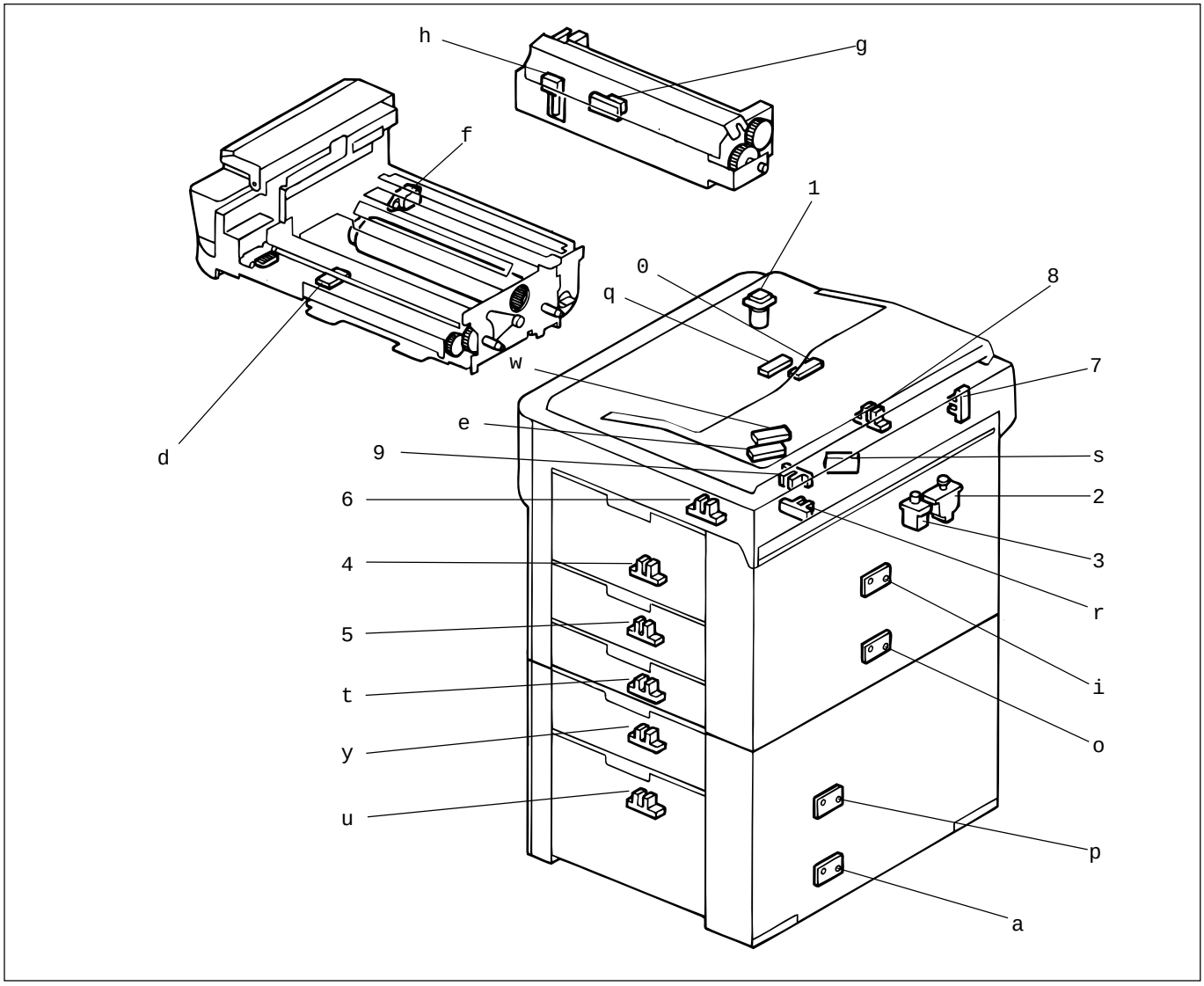


The ADF (DF-204), STR (ST-103, ST-210), and DBU (DB-307, DB-107, DB-607) options of this machine are controlled by the CB (control board).

1. Operation

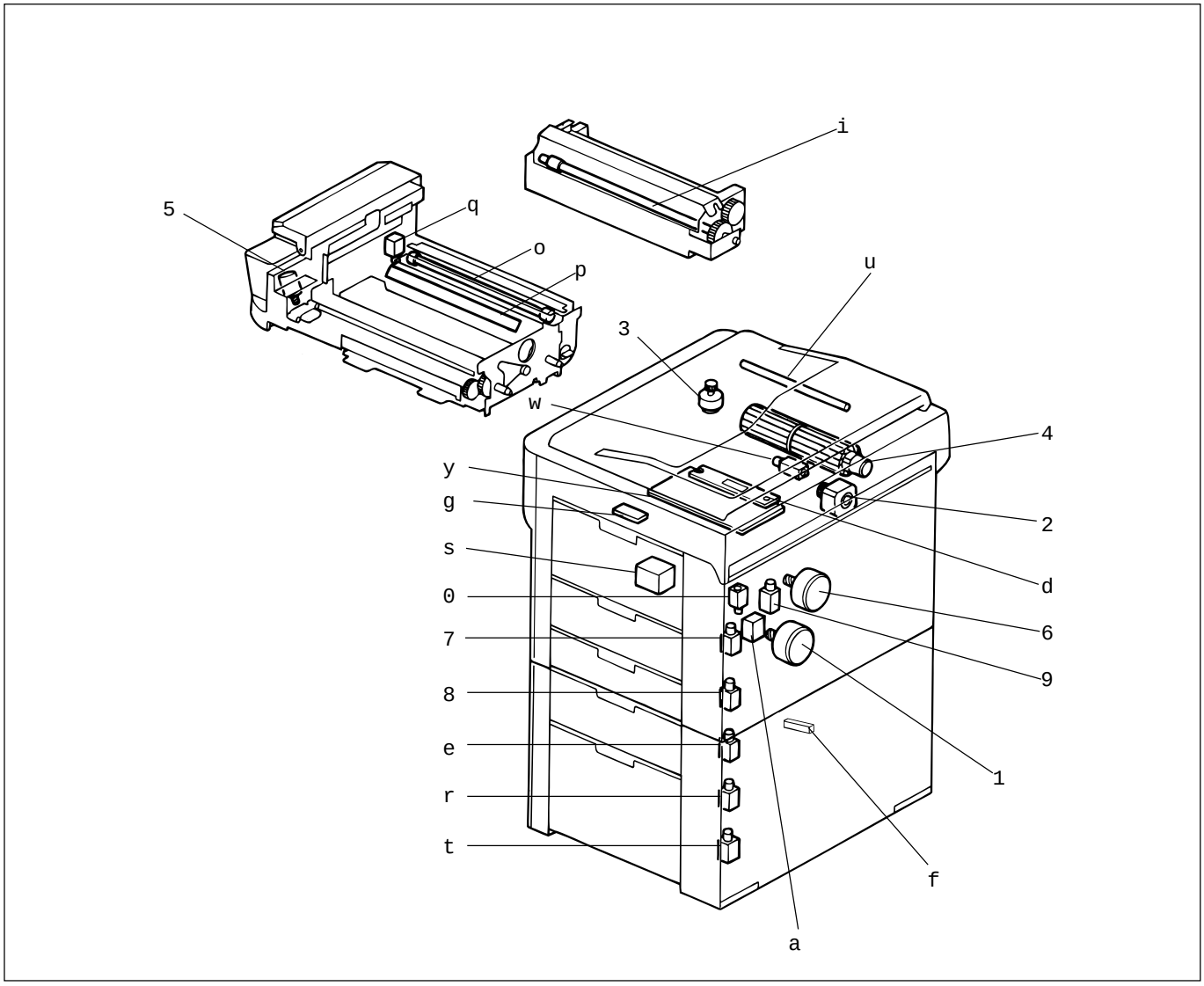
Each optional devise is controlled directly by the CB.
(Refer to the “Option” manual for the operation of each option.)
Power is supplied to the ADF directly by the PSB (power supply board), and to the STR and DBU from the CB.

2223 ELECTRICAL PARTS LAYOUT DRAWING



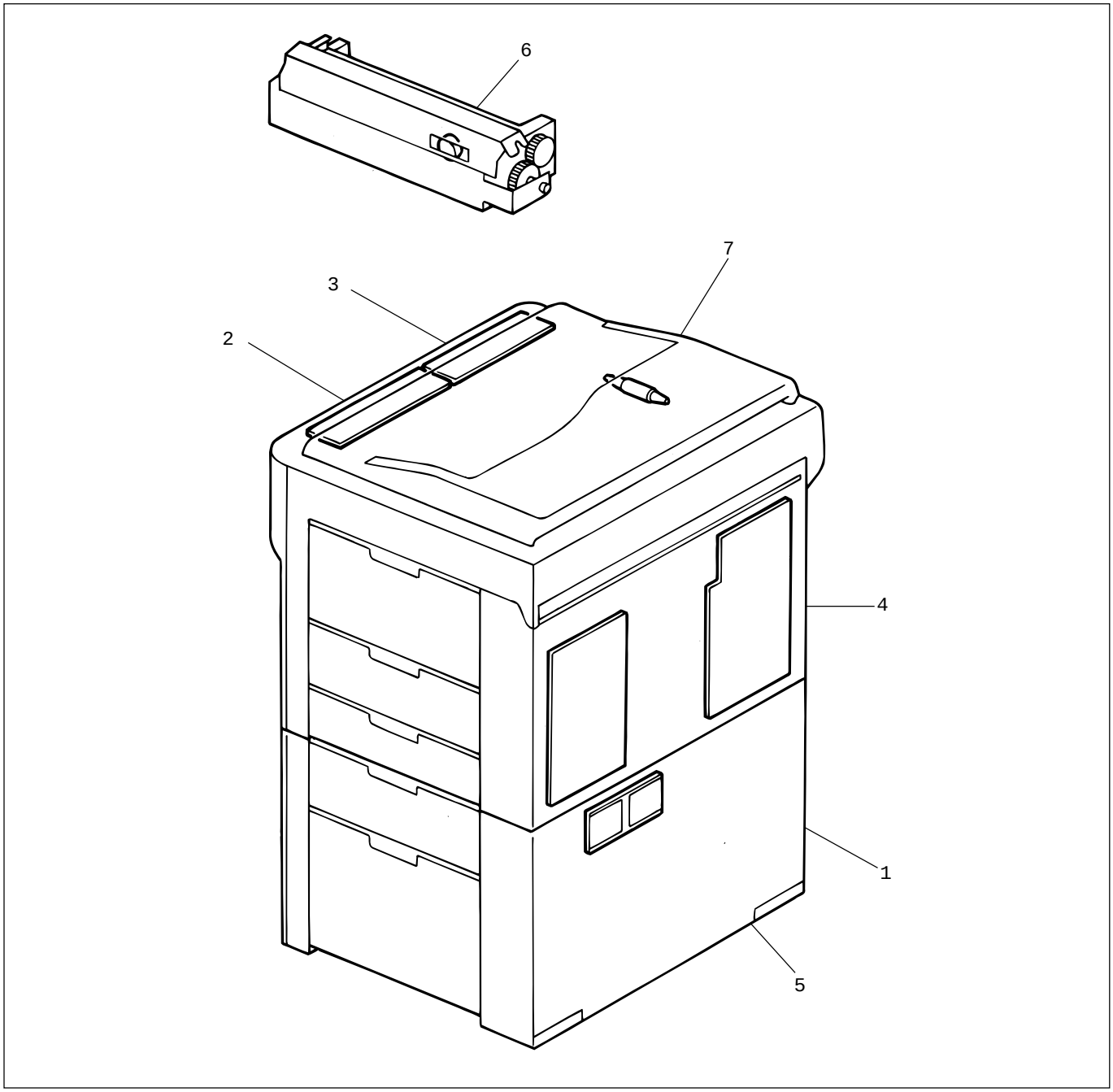
1. Switches and sensors

1	SW1	Main switch
2	MS1	Inter lock switch
3	MS2	Front door switch
4	PS1	Upper paper feed PS
5	PS2	Lower paper feed PS
6	PS3	Pre-shutter PS
7	PS4	Home position PS
8	PS7	Lens HPPS
9	PS8	Paper exit PS
0	PS9	APS (within width)
q	PS10	APS (outside width)
w	PS11	APS (within length)
e	PS12	APS (outside length)
r	PS13	APS switch PS
t	PS121	DBU upper paper feed PS (option)(domestic only)
y	PS122	DBU middle paper feed PS (option)(domestic only)
u	PS123	DBU lower paper feed PS (option)(domestic only)
i	SSB1	Upper tray paper size detection board
o	SSB2	Lower tray paper size detection board
p	SSB121	DBU upper tray paper size detection board (option)(domestic only)
a	SSB122	DBU middle tray paper size detection board (option)(domestic only)
s	EESB	EE sensor board
d	TDS	Toner density sensor
f	TLD	Toner level detection sensor
g	TH1	Fixing temperature sensor 1
h	TH2	Fixing temperature sensor 2



2. Motors, solenoids, lamps, and heaters

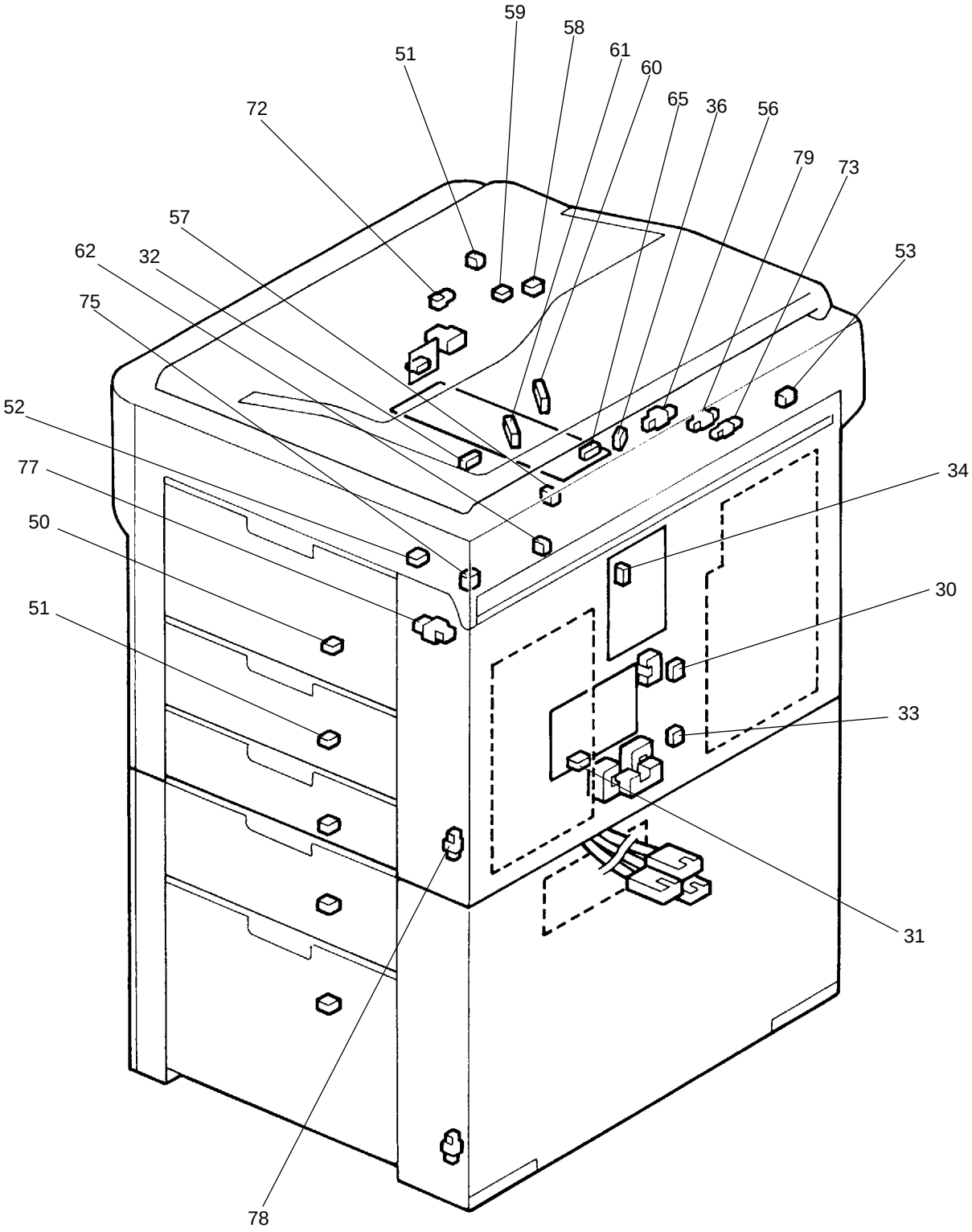
1	M1	Main motor
2	M2	Optics drive motor
3	M3	Lens drive motor
4	M4	Cooling fan motor
5	M5	Toner supply motor
6	M6	Drum drive motor
7	SD1	Upper paper feed solenoid
8	SD2	Lower paper feed solenoid
9	SD3	Resist solenoid
0	SD4	Multi feed by-pass solenoid
q	SD5	Separation claw solenoid
w	SD6	Radiation solenoid
e	SD121	DB upper paper feed solenoid (domestic only)
r	SD122	DB middle paper feed solenoid (domestic only)
t	SD123	Db lower paper feed solenoid (domestic only)
y	HV	High voltage unit
u	L1	Exposure lamp
i	L2	Fixing heater lamp
o	PCL	Pre-charging lamp
p	CEL	Charge elimination LED
a	C (T)	Total counter
s	C (K)	Key counter (option)
d	PTC	Internal heater
f	HTRDB	Db heater (option)
g	HTRM	Mirror heater (option)

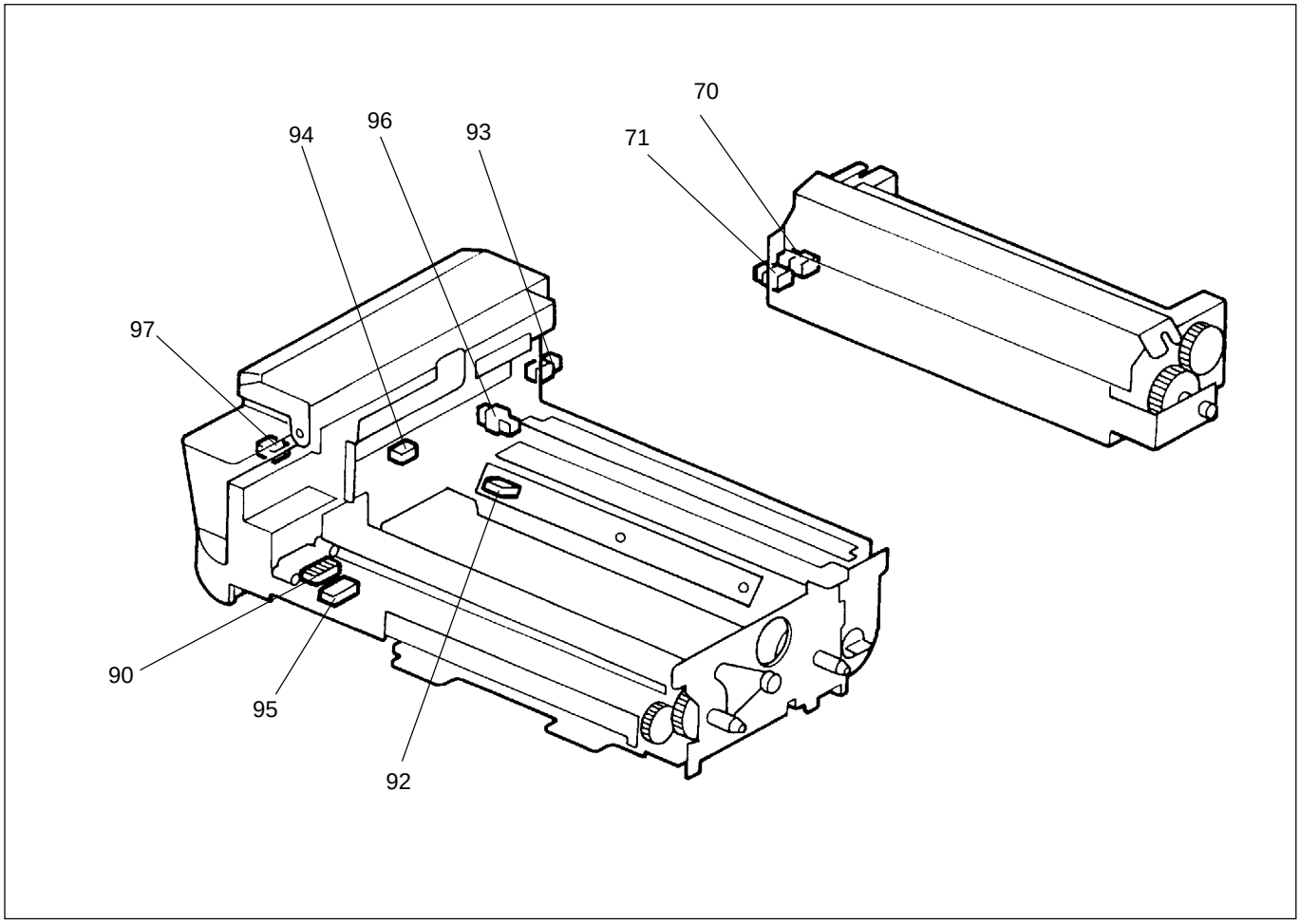


3. Boards and others

1 CB Control board
2 OBR Right operation board
3 OBL Left operation board
4 PSB Power supply board
5 PFUB PFU relay board (domestic only)
6 TS1 Thermostat
7 f1 Optics temperature fuse

CONNECTOR LAYOUT DRAWING

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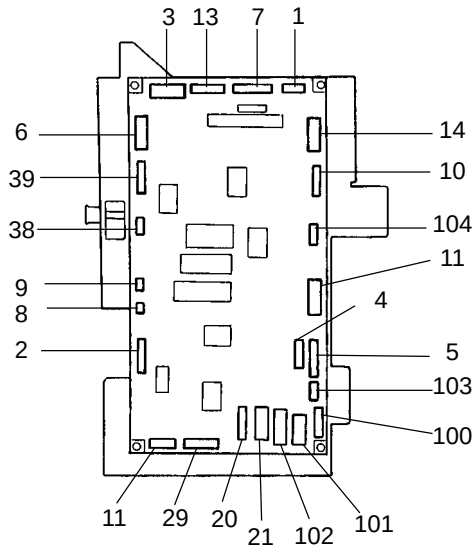
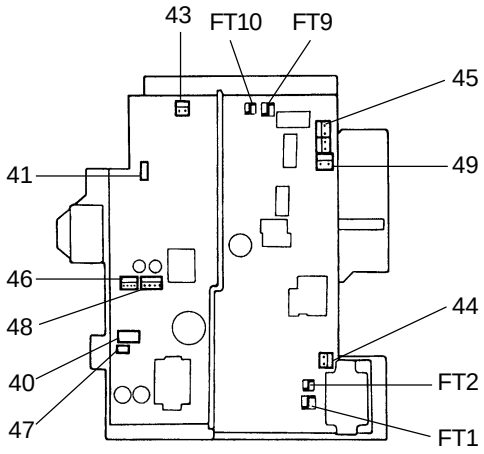
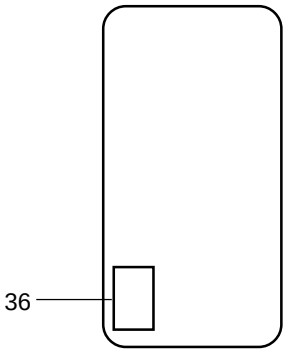
Control board



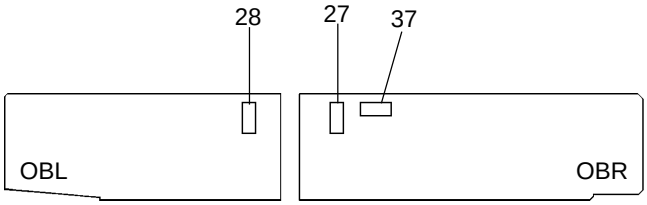
Power supply board



EE board



Operation board



JAM DETECTION LIST

This machine detects the following kinds of jams:

[1] Paper Jams

Paper jams that occur in this machine are indicated by a flashing the “paper jam” LED and also by a flashing 3-digit jam code on the magnification indicator LED.

	Classification	Jam code	Cause		Operation if jam occurs	Method of resetting machine
Main body	Open jam	J11	When not operating	• PS1 (upper paper feed) remains ON. • The conveyance door of the upper tray is open.	—	Open the conveyance door of the upper tray and remove any jammed paper. Then, close the door.
	Open/ paper feed jam	J12	When not operating	• PS2 (lower paper feed) remains ON. • The conveyance door of the lower tray is open.	—	Open the conveyance door of the lower tray and remove any jammed paper. Then, close the door.
			When operating	PS1 (upper paper feed) does not turn ON within a fixed period after PS2 (lower paper feed) turns ON.	If a copy operation was taking place when the jam occurred, the main body will stop after the paper exits.	Open the conveyance door of the lower tray and remove any jammed paper. Then close the door. Draw the lower tray out and remove any jammed paper.
	Paper feed jam	J16	When not operating	• PS3 (shutter front) remains ON. • When there is paper at PS3 in ADF jam/ ADF open, the copy button is pressed after selecting paper size that is different from that of the paper at PS3.	—	Open the front door and upper main body and remove any jammed paper. Then close the body and door.
	Conveyance jam	J31	When operating	PS8 (paper exit) does not turn ON within a fixed period after PS3 (shutter front) turns ON.	The machine will stop immediately.	Open the front door and upper main body and remove any jammed paper. Then close the body and door.
	Exit jam	J32	When operating	No turning OFF within a fixed period after PS8 (paper exit) turns ON.	The machine will stop immediately.	Open the front door and upper main body and remove any jammed paper. Then close the body and door.
			When not operating	PS8 (paper exit) remains ON when the machine is idling.	—	

[1] Paper Jams (continued)

	Classification	Jam code	Cause		Operation if jam occurs	Method of resetting machine
DBU	Open/ paper feed	J13	When operating	• PS121 (DBU upper paper feed PS), or PS111 (LCTpaper feed PS) remains ON when the machine is idling. • The conveyance door of LCT tray or DBU upper tray is open.	—	Open the paper conveyance door of DBU and remove any jammed paper. Then close the door. Draw out the DBU tray to remove any jammed paper.
			When operating	• PS2 (lower paper feed) does not turn ON within a fixed period after PS121 (DBU upper paper feed PS), or PS111 (LCT paper feed PS) turns ON.	If a copy operation was taking place when the jam occurred, the main body will stop after the paper exits.	
		J14	When not operating	• PS122 (DBU middle paper feed PS), or PS112 (PFU paper feed PS) remains ON when the machine is idling. • The conveyance door of BDU middle tray or PFU tray is open.	—	
			When operating	• PS121 (DBU upper paper feed PS), or PS111 (LCT paper feed PS) does not turn ON within a fixed period after PS122 (DBU middle paper feed PS), or PS112 (PFU paper feed PS) turns ON.	If a copy operation was taking place when the jam occurred, the main body will stop after the paper exits.	
		J15	When not operating	• PS123 (BDU lower paper feed PS) remains ON when the machine is idling. • The conveyance door of BDU lower tray is open.	—	
			When operating	PS123 (BDU lower paper feed PS) does not turn ON within a fixed period after PS122 (BDU middle paper feed PS) turns ON.	If a copy operation was taking place when the jam occurred, the main body will stop after the paper exits.	

[1] Paper Jams (continued)

	Classification	Jam code	Cause		Operation if jam occurs	Method of resetting machine
ADF	ADF open jam	J61	When operating	ADF is opened during ADF operation.	The ADF will stop immediately and the main body will stop upon completion of the ongoing copy operation.	Open the ADF and remove any jammed paper. Then close the ADF.
	Paper feed jam	J62	When operating	• PS304 is not turned OFF within a specified period after it is turned ON. • PS304 remains ON when the original is placed into the ADF.	The ADF will stop after the pressure has been released from the original, and the main body will stop upon completion of the ongoing copy operation.	Open the ADF and remove any jammed paper. Then close the ADF.
			When not operating	PS304 (original passage) remains ON while the machine is idling in ADF mode.	—	
	Paper exit jam	J63	When operating	• PS306(original exit) is not turned ON within a specified period after the ADF original paper exit is started. • PS306 is not turned OFF within a fixed period after it is turned ON.	The ADF will stop immediately and the main body will stop upon completion of the ongoing copy operation.	Open the ADF and remove any jammed paper. Then close the ADF.
			When not operating	PS306 remains ON for at least one second while the machine is idling in ADF mode.	—	
	ADF changeover jam	J65	When operating	Jamming occurs during original changeover.	The machine will stop immediately.	
STR	Sorter jam	J72	When operating	• Sorter inlet sensor is not turned ON within a specified period after PS8 (exit detecting) is turned ON. • Sorter inlet sensor is not turned OFF within a specified period after it is turned ON.	The machine will stop immediately.	Open the front door and sorter door and remove any jammed paper. Then close the doors.
			When not operating	Sorter inlet sensor remains ON when the machine is idling.	—	
	Staples jam	J75	When not operating	Staples jam in the stapler unit.	—	Remove any jammed staple and turn OFF-ON the main switch.
ADU	Conveyance jam	J92	When operating	• PS101(ADU conveyance 1 PS) does not turn ON within a specified period after PS102(ADU exit PS) turns ON during ADU face side copying. • PS102(ADU exit PS) does not turn ON within a specified period after PS101(ADU conveyance 1 PS) turns ON during ADU face side copying.	The machine will stop immediately.	Open the ADU upper conveyance door and remove any jammed paper. Then close the door.
			When not operating	PS101(ADU conveyance PS) remains ON while the machine is idling.	—	
		J93	When operating	• PS102(ADU exit PS) does not turn OFF within a specified period after it turns ON during ADU face side copying. • PS109(ADU paper HP PS) does not turn ON when it is ADU nip timing.	The machine will stop immediately.	
			When not operating	PS102 (ADU exit PS) remains ON while the machine is idling.	—	

[1] Paper Jams (continued)

	Classification	Jam code	Cause		Operation if jam occurs	Method of resetting machine
ADU	Paper feed jam	J94	When operating	• PS104(ADU conveyance 2 PS) does not turn ON within a specified period after PS103(ADU paper feed PS) turns ON during ADU back side copying. • PS105(ADU conveyance 3 PS) does not turn ON within a specified period after PS104(ADU conveyance 2 PS) turns ON during ADU back side copying. • PS2(lower paper feed PS) does not turn ON within a specified period after PS105(ADU conveyance 3 PS) turns ON during ADU back side copying.	The main body will stop upon completion of the ongoing copy operation.	Open the ADU front door or draw out the lower tray and remove any jammed paper. Then close the door and insert the tray.
			When not operating	PS103(ADU paper feed PS) or PS104(ADU conveyance 2 PS) remains ON during the machine is idling.	—	
		J95	When not operating	PS105(ADU conveyance 3 PS) remains ON during the machine is idling.	—	Draw the lower tray and remove any jammed paper. Or open the tray 3 conveyance door and remove any jammed paper. Then close the door.

[2] Alarms

The alarms in this machine are displayed as flashing 3-digit jam codes on the magnification indicator LEDs.

	Classification	Error code	Cause	Operation in event of error message	Method of resseting machine
Main body	Fault connection of Drum unit connector/ Toner level detection connector	P20	• The drum unit is not connected properly to the main body. • The connector of the toner level detection sensor is not connected properly.	When not operating, copy cannot be performed.	• Turn the SW1 (main) OFF, then ON again after. • Connecting securely.
	Toner supply	P25	300 copies have been made without supplying toner after the toner supply LED has blinked or TDS output is more than 2.3 V.	When "0 : Enable" is set to 25 mode-code 92, the machine will stop after the error code is displayed. When 300 counts have been reached during copying, the error code is displayed after completion of copying. However, if "1 : Disable" is set, the machine does not either stop or indicate any messages.	Supply toner.
	TDS not adjusted	P26	TDS is not adjusted automatically after PM counter has been reset.	—	Perform L detecting adjustment (47 mode, code 51).
	Fault connection of toner density sensor connector	P27	Connector (CN95) for the toner density sensor is not connected, or improperly connected. There is no developer. Or TDS output is abnormal (0.2 V or lower).	—	After connecting properly, SW1 (main switch) needs to be turned ON and OFF. Supply developer. Or, the sensor needs to be replaced.
	Front door opened	P51	The main body front door is opened. Zero-cross signal is abnormal.	The machine will stop immediately.	Close the front door. Replace the CB (control board) or PSB (power supply board)
	Key counter not installed	P81	The required key counter is not installed.	—	Insert the key counter.
	EEnot adjusted	P88	EE is not adjusted automatically.	—	Perform EE automatic adjustment with 47 mode.

[2] Alarms (contnued)

	Classification	Error code	Cause	Operation in event of error message	Method of resseting machine
ADF	U-turn cover opened	P61	The U-turn cover of ADF unit is opened.	The ADF will stop immediately, and the main body will stop after the completion of the ongoing copy.	Close the U-turn cover.
	Original left in ADF	P64	The ADF mode was selected after non-ADF copies had been made, but the ADF was not opened to remove original remaining on the original glass.	The copy operation cannot take place.	Open the ADF and remove the original.
	Paper non-feed	P68	Paper non-feed state occurred after feeding an original in the ADF mode.	The ADF will stop immediately, and the main body will stop after the completion of the ongoing copy.	Open the ADF and remove the original.
	Original non-feed	P69	When copy is started, the original on the ADF was removed or paper non-feed occurred.	The ADF will stop immediately, and the main body will stop after the completion of the ongoing copy.	Pull out the original and place it correctly in the ADF.
STR	Sorter open	P71	The sorter switch interlock (door, top cover, or connection to main body) is open.	If a copy operation was taking place when the jam occurred, the main body and sorter will stop immediately.	Close the interlock of the sorter.
	Number of sheets exceeds stapler capacity	P74	Sorted number of sheets per bin exceeds stapling capacity.	The main body will stop after the completion of the ongoing copy.	Remove all sheets of paper from the tray.
	Excessive sorted sheets		Excessive sheets are sorted on the sorter tray.		
	Paper remained		• Paper remains on the tray. • Paper remains after automatic stapling.		
	Without staple	P76	There is no staples in the stapler unit.	–	Refill the staples in the stapler unit.
	Improper staple size	P77	Improper staple size is selected.	–	Select proper staple size.
	Without stapler unit or malfunction	P78	There is no stapler unit or it is not installed properly.	–	Set the stapler unit properly, or cancel stapler mode.

[2] Alarms (continued)

	Classification	Jam code	Cause	Operation if alarm occurs	Method of reseting machine
ADU/LCT/PFU	Interface faulty	P10	The connectors for ADU/LCT/PFU are not connected properly.	–	Connect the connectors properly.
	Interlock opened	P91	The ADU front door is opened.	The machine will stop immediately.	Close the door.
	Main unit lower tray not inserted	P94	The main body lower tray is not inserted when starting ADU copy mode, or during changeover side copying.	The machine will stop immediately.	Insert the main body lower tray properly.
	Paper remained in ADU stacker	P96	Paper remains in the stacker when ADU mode is selected.	Paper remaining indicator blinks and the copy button does not function.	Open the ADU front door and remove any remained paper. Then close the door. Or cancel ADU mode.
	ADU size improper	P97	Paper size not set for ADU is selected.	–	Select the size set for ADU. Or cancel ADU mode

[3] Main Body Abnormality

The abnormalities in this machine are displayed as flashing 3-digit jam codes on the magnification indicator.

Note: When the checking part is a driving one such as motor or solenoid, check the mechanical or loading parts for damage. Also check wire and connector for open or short circuit or loose connector.

	Classification	Error code	Cause	Operation when abnormality occurs	Method of resetting machine	Check the following:
Main body	Leakage detection	F09	Leakage was detected at the main body.	If a copy operation was taking place when the abnormality occurred, the main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.	Rewrite the data at address "P49" in the 25 mode to "0".	L1 (exposure lamp) L2 (fixing heater lamp) PSB (power supply board) Short circuit in AC line
	Main Relay abnormality		RL1 or RL2 on PSB (Power Supply board) is turned off.	The main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.		PSB (Power Supply board)
	Toner supply motor abnormality	F23	When turning the M5 (toner supply) ON, current in the M5 exceeds 380mA.	The machine will stop immediately.	Turn the SW1 (main switch) OFF.	M5(toner supply motor)
	TDS abnormality	F26	When adjusting the toner density, toner density adjustment cannot be finished even if TDS CONT signal is changed from 4.7 to 8.3V.	The copy operation cannot take place.		TDS(toner density sensor) Developer Disconnected connector
	High voltage power supply abnormality	F28	The charging, transfer, or separation outputs exceed the specified output.	If a copy operation was taking place when the abnormality occurred, the main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.		HV(high voltage unit)
	High fixing temperature fault	F34	The fixing temperature has exceeded the specified temperature. • The high fixing temperature fault detection software is activated. • The fixing temperature fault detection circuit is activated.	The main relays will be turned OFF, and all buttons will be rendered inoperative.	Rewrite the data at address "P47" in the 25 mode to "0".	TH1(fixing temperature (middle)) TH2(fixing temperature (end))
	Low fixing temperature fault	F35	Warm-up was not completed within a specified period from the start of warm-up. • The low fixing temperature fault detection software is activated.			CB(control board) TH1(fixing temperature (middle)) TH2(fixing temperature (end)) L2(fixing heater lamp)
			The fixing temperature at the end of warm-up is less than the specified temperature. • The low fixing temperature fault detection software is activated.			
			The fixing lamp does not turn OFF within the specified period.			

	Classification	Error code	Cause	Operation when abnormality occurs	Method of resetting machine	Check the following:
Main body	Fixing temperature/ sensor abnormality	F36	The fixing temperature sensor or its circuit is opened.	The main relays will be turned OFF, and all buttons will be rendered inoperative.	Rewrite the data at address "P47" in the 25 mode to "0".	TH1(fixing temperature (middle)) TH2(fixing temperature (end)) L2 (Fixing heater lamp)
	Optics return abnormality	F41	The PS4 (home position) is not turned ON within a specified period after the start of the optics return.	The main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.	Turn the SW1 (main switch) OFF, then ON again.	CB(control board) PS4(home position) M2(optics)
	Optics forward scan abnormality	F42	The PS4 (home position) is not turned OFF within a specified period after the start of the forward optics scan.			CB(control board) PS4(home position) M2(optics)
	CVR abnormality	F43	The signals of L1 CONT and L1 ACK differ.			CB (control board) L1 (exposure lamp) PSB (power supply board)
	Lens drive abnormality	F45	The PS7 (lens home position) is not turned ON within a specified period after the start of the initial operation of the machine.			PS7(lens home position) M3 (lens drive)
	Main motor abnormality	F52	READY signal does not become [L] within a specified period during M1(main motor) driving.	The main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.	Turn the SW1 (main switch) OFF, then ON again.	M1 (main motor) CB (control board) PSB (power supply board)
	Drum drive motor abnormality	F53	READY signal does not become [L] within a specified period during M6(drum drive motor) driving.	The main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.	Turn the SW1 (main switch) OFF, then ON again.	M6 (drum drive motor) CB (control board) PSB (power supply board)
	Cooling fan motor abnormality	F54	M4 (cooling fan motor) is not operated properly.	If a copy operation was taking place when the abnormality occurred, the main body will stop immediately, the main relays will be turned OFF, and all buttons will be renderedinoperative.	Turn the SW1 (main switch) OFF, then ON again.	M4 (cooling fan motor)

	Classification	Error code	Cause	Operation when abnormality occurs	Method of resetting machine	Check the following:
Main body	AE automatic adjustment abnormality	F88	Proper AE adjustment cannnot be performed.	The main body will stop immediately, the main relays will be turned OFF, and all buttons will be renderedinoperative.	Turn the SW1 (main switch) OFF, then ON again.	AE (AE sensor board) L1 (exposure lamp) PSB (power supply board)
ADF	ADF communication abnormality	F60	The ADF cannot communicate with the CB for a specified period.	The ADF and main body will stop immediately, the main relays will be turned OFF, and all buttons will be rendered inoperative.	Turn the SW1 (main switch) OFF, then ON again.	ADFCB (ADF control board) CB (control board) Wiring
	ADF drive motor abnormality	F67	While operating ADF, the signal from the ADF encoder is not received within a fixed period.			M301 (ADF drive motor) ADFCB (ADF control board)
STR	Sorter communication abnormality	F70	Communication between the main body CB and the sorter is suspended over a fixed period.	The sorter and the main body are stopped immediately, the main relay is turned OFF, and none of the keys is accepted.	Turn the SW1 (main switch) OFF, then ON again.	STCB (ST control board) CB (control board) Wiring
	Stapler motor abnormality	F76	Stapler motor does not turn. Staple position PS or Staple swing PS is abnormal.			Stapler motor Staple position PS Staple swing PS STCB(ST control board)
	Bin drive abnormality	F77	The bin drive cannot be finished within a specified period.			Bin shift motor Bin position PS
ADU/LCT	LCT motor abnormality	F18	PS110(LCT upper limit PS) does not ON within a specified period after M102(LCT motor) is turned ON.	The sorter and the main body are stopped immediately, the main relay is turned OFF, and none of the keys is accepted.	Turn the SW1 (main switch) OFF, then ON again.	PS110(LCT upper limit PS) M102(LCT motor)
	ADU drive abnormality	F98	PS106(ADU cam PS) does not ON within a specified period after M101(ADU drive motor) is turned ON.			PS106(ADU cam PS) M101(ADU drive motor)